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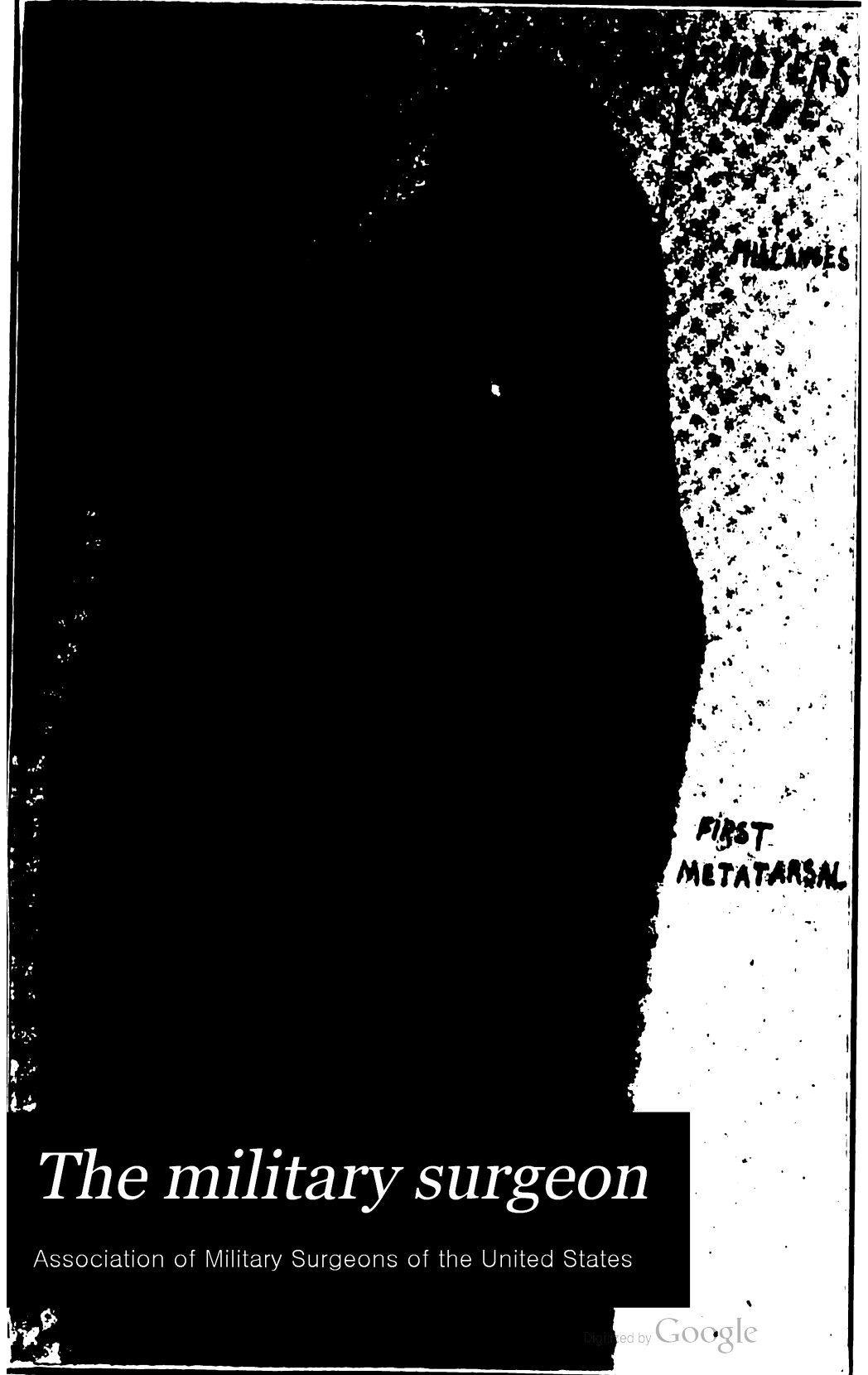

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EDITED BY

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WASHINGTON, D. C.

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1911

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ENZOOTIC PLAGUE IN THE UNITED STATES.

BY PASSED ASSISTANT SURGEON W. C. RUCKER, U. S. PUBLIC HEALTH AND MARINE HOSPITAL SERVICE.

THE relation which the lower animals bear to the transmission of disease to man has in recent years assumed a most important position in epidemiology and in no field has it proven more important or of greater practical value than in the combat with bubonic plague. The aeon-old knowledge of the role of the rat as a plague vehicle, lost in the darkness of the middle ages, has been revived and converted by modern scientific methods from a superstition into a practical working basis for the prevention and eradication of pest. Not only have we studied the disease as it exists in rats and man, but we have gone further in an endeavor to discover the causes of its perpetuation. It is of this latter phase of the subject that this paper particularly desires to deal.

Observers in many countries have noted epizootics occurring coincidentally with epidemics of plague and records of heavy animal mortality among apes, marmots, and hares are not infrequent in the literature of the subject. These epizootics have been believed to be plague, but in all animals except the marmots and the allied species, the belief has existed that the disease was accidental as it is in rats and man. Certain authors, however, notably La Dantec, have held that the marmot and the allied species act as

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the natural reservoirs for plague and "that to eradicate plague forever from the surface of the globe it is necessary that an international warfare be waged on this species." It was known that plague once introduced into a community might smoulder for years, claiming now and then a victim, but not existing in epidemic form until some unknown condition of affairs brought about a sudden fulminant explosion of the disease, accompanied by a heavy mortality of both men and rats. The mechanism by which the disease was kept alive during the intervals to be subsequently transmitted to man was the subject of such speculation, but it was only very recently that we have arrived at anything like a reasonable explanation. This may be best exemplified by a study of the enzootic focus for plague as it exists on the western coast of the United States.

The present pandemic of pest began in 1893 and following the lines of commerce first manifested itself in the United States by an outbreak in 1900 in the Chinese quarter of San Francisco. How long the disease had existed among the rats there before it began taking its toll of human victims, no one can say, nor can the exact manner in which the disease was brought to America be definitely determined, but it is not at all improbable that it was transported in the bodies of rats from Hawaii, where it was epidemic at the time. Now the great commerce between this country and Hawaii takes place through the sugar ships and these ships for the most part discharge their cargoes in northern Contra Costa county, some twenty miles from San Francisco. Up to 1901 the most prevalent small mammal in that county was the ground squirrel, the Citellus beechyi, but in that year there appeared some deadly and widespread malady among them and the species was almost exterminated.

In the meantime, the disease in San Francisco was spreading among men and it was not until 1904, after having killed 225 people, that it was finally eradicated. A few scattering cases among human beings residing outside of the then recognized zone of infection were seen during this period and in each of these the absence of association with rats was noted and intimate contact with ground squirrels was remarked. In some of the cases the patients had hunted ground squirrels a day or two before their illness and in others they had eaten the flesh of this animal.

In 1907 plague reappeared among rats and men in San Francisco and was speedily eradicated by Surgeon Rupert Blue, but the question of the origin of the second outbreak was one which demanded solution lest there be a reimportation of bubonic

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plague. Taking all the foregoing facts into consideration and in addition the knowledge that ground squirrels for food purposes were constantly being imported into San Francisco, it was considered extremely probable that it was in this way that infected fleas had been brought into the city again. These insects finding lodgement on rats would spread the disease among them and epizootic plague would be speedily followed by epidemic plague.

In spite of the fact that during the previous plague campaign every endeavor had been made to determine the cause of the death of the ground squirrels and no plague infection had been found among them it was decided to again take samples for laboratory examination. In the interim between 1902 and 1908 the hills had become repopulated with squirrels and in the summer of 1908 a large number were secured and examined. Of these four were found to have plague. These were the first naturally infected plague squirrels found in America.

It was then seen that a new plague focus had been uncovered and in the spring of 1909 the Public Health and Marine-Hospital Service, which had charge of the plague situation in California, began the regular examination of the ground squirrels in Contra Costa county. It was soon found that infected squirrels could be secured in almost all parts of the county and operations were spread into Alemeda county, to the southward. Plague infection was there found to be widely distributed and the work has been expanded until at the present time it is known that 20,273 square miles, about 1-7th of the total area of California, is infected. This is about 1-3rd of the total area over which the Citellus beechyi is distributed. It may also be noted that plague has been found in nature in another species, the wood rat (Neotoma fuscipes), a species which in some variation is found distributed over a wide area "in all of those states west of a line drawn from the southwest corner of North Dakota to Pensacola, Florida, and are also found in the Appalachian chain of mountains from the Hudson River to northern Alabama."

Extensive laboratory studies have been made by Passed Assistant Surgeon G. W. McCoy of all squirrels obtained from the infected zone and it has been found that squirrel fleas (Ceratophylus acutus) will transmit plague to rats and that rat fleas (Ceratophylus fasciatus) will carry the disease to squirrels. Further, it may be noted that for the most part the disease exists in chronic form in ground squirrels and that live squirrels from the infected zone frequently possess a relatively high degree of immunity to plague. It may thus be seen that there exists an ideal condition

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for the perpetuation of the disease without the extermination of the host and that in those places where the life zones of the suburban rat and the country squirrel overlap a rat plague epizootic may be started. These rats in turn communicating the disease to the city rat, which comes in more intimate contact with man, form the starting point of an epidemic. To be sure human cases which have their origin direct from squirrels occur every year, but this may be considered as a negligible factor because if people will hunt squirrels in spite of repeated warnings they have only themselves to thank if they contract plague, and in the absence of suctorial insects man plays no rôle in the transmission of plague of the bubonic or frank septicaemic types.

The discovery of the disease in the wood rat is of importance because of the wide distribution of that species and as indicating the possibility of the spread of plague among other small mammals, and hence the chance of the wide distribution of the disease over our country.

From the foregoing it will be seen that the task which confronts those who are engaged in limiting and eradicating plague in the United States is an herculean one. The obliteration of this plague focus is the largest single piece of sanitary work ever attempted by man. Imagine a most diverse terraine; hills and valleys, woods and meadows, small hamlets, desolate mountain sides, and thriving cities. Conceive of the elements of distance, time, bad roads, and summer heat, and the multitude of details which surround any such piece of work and you will have some conception of the problem now confronting Surgeon Rupert Blue and his associates.

The operations may be considered under the headings of scouting and eradication:

Scouting consists not only in the taking of samples of the squirrel population, but also in the careful study of their natural habits, their foods, their habitations, their mating seasons, and migrations. It means the employment and training of hunters, the selection of their arms and equipment, the manifold details of the shipment of the squirrels which they have shot and those which they have trapped alive for laboratory purposes. It comprehends the disposition of the scouting force so that their labors may be most efficient and the conduct of laboratories at proper points for the examination of specimens and the execution of experiments. This work is now going forward and the epizootic zone is being well deliniated.

Eradication contemplates the complete extinction of the ground

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squirrel throughout the entire infected zone. Attention was first focussed on the maintenance of rodent-free zones for the protection of threatened points, particularly San Francisco, Oakland, Alameda and Berkeley, and the destruction of the known foci of infection at the strategic points. This entails the application of the knowledge of the life habits of the squirrel to the preparation and placing of poisonous agents, the utilization of the natural enemies of the squirrel and the use of noxious and explosive gases. It means the training of men for this purpose and the execution of a multitude of administrative details.

If the work were to rely solely upon the forces of the federal government the entire Army, Navy, and Organized Militia would be necessary for the accomplishment of this gigantic task. Hence the efforts of the state and county officials, the ranchers' associations, and the individual landholder have all been called for. When it is considered that the sustenance of a ground squirrel costs approximately $1.00 per annum and that there are millions of them in the infected zone it will readily be seen why the ranchers are willing to lend their cooperation. It is not in the cultivated lands that the greatest difficulties will be met, but in the grazing countries, where there are vast areas of wild land. These must be freed from squirrels by the state and county officials.

It has been shown how plague has smouldered in the United States for the past decade, for the most part unrecognized except by a small number of men who have made a deep study of the disease. We have seen how this disease has spread and inasmuch as it has followed pretty closely the railway lines it is not at all improbable that they have played no small part in this dissemination. We have seen also how other species are infected and may therefore look for a spread by contiguity. Would it not then seem wise to subject the rodent population of the entire nation to a careful examination to discover if perchance the disease may not exist in some hitherto unsuspected place? Let it not be forgotten that this is virgin soil for plague and that a minimum of effort now will reap a maximum reward in the future. Observations of epizootics among the rodents in different parts of the country would be especially valuable, as would also the routine examination of rats. Plague is no less the enemy of man than in the days when it ravaged the old world, much as it does India today, but we have efficient means at our hands for our protection and ours will be the fault if we do not use them.

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DISCUSSION.

COLONEL L. M. MAUS, U. S. A.—"While Commissioner of Public Health, Philippine Islands, 1901-1902, I combatted an epidemic of bubonic plague in Manila. I inaugurated a campaign against the rats of the city of Manila, set 1,500 to 2,000 traps daily for three or four months, and every night 7,500 plates of rat bane, consisting of arsenious acid with rusty bacon or cheese. There were from 100 to 125 cases of plague in the city monthly, when I first began the campaign against rodents. At the end of three or four months the plague had disappeared. The rats were infected to the amount of 3% at first, but the percentage decreased among the rats as the disease disappeared among the natives. About 20,000 rats were examined microscopically at the laboratory of the Board of Health. It is estimated that more than 1,000,000 rats were caught or killed. Besides a campaign against the rats 1,000 or more houses in Manila were remodeled or repaired and made habitable. Cement floors were laid, rat runs closed up, doors and windows put in. When the epidemic among the natives was over it was found that it was likewise over among the rats, as shown by microscopical examination of the few remaining. It was conceded at that time that the flea was the host. A kitchen to make the bane was erected and a force of from 4 to 5 men to prepare the food. About 200 men were employed in Manila to catch the rats and set the rat traps. The disease was presumed to have been imported from Hong Kong."

MAJOR L. L. SEAMAN, U. S. V., spoke briefly of his experience with plague in Newchuang and Rio de Janeiro and gave special praise to a rat-killing campaign he had witnessed in Tokyo.

P. A. SURGEON RUCKER discussed rats in plague with special reference to the method of destruction by poison, etc., and trapping for laboratory examination. He explained what was essential, in his opinion, to eradicate plague from a city.

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REPORT OF THE BOARD FOR THE STUDY OF TROPICAL DISEASES IN THE PHILIPPINE ISLANDS, QUARTER ENDING SEPT. 30, 1910.*

By Major Weston P. Chamberlain, Medical Corps, U. S. Army, Captain Horace D. Bloombergh, Medical Corps, U. S. A., and Captain Edwin D. Kilbourne, Medical Corps, U. S. A.

EXPERIMENTS ON THE RELATIVE ABSORPTION OF SOLAR HEAT BY OLIVE-DRAB AND KHAKI-COLORED DRILLING.

ON ARRIVAL at the Sales Department of the Depot Quartermaster in Manila of the first supply of the new olive-drab cotton uniform material a sample was obtained and a series of experiments carried out to determine its heat absorbing power as compared with the ordinary khaki colored cotton material furnished by the Quartermaster's Department. Two hundred and sixty-five temperature readings were made during these observations.

Principles Involved in Heat Absorption. It is a well-established principle of physics that the absorption of solar heat is least for white material and increases through a definite series of colors down to black for which it is at its maximum. This principle is of the greatest importance in selecting material for outer clothing and headgear in warm countries. White garments, theoretically and practically, are the coolest in hot weather but are unsuited for average military conditions for various reasons which it is not necessary to enter upon here. Most sanitary authorities agree that in the tropics the effects of the sun's rays make it necessary for a uniform to approach as nearly as possible to white, protection against the undue absorption of the solar heat rays depending entirely upon the color itself and not on the nature of the material or its texture. Gray comes close to white in possessing slight absorptive power and Notter and Firth say that khaki drill stands near to gray in this respect and appears to answer very well for a clothing material in the tropics.

Basing his opinion on the Aldershot experiments, Woodruff

*Report made to the Surgeon General, U. S. A.

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advises white, gray or yellow for outer clothing of those exposed to the direct rays of the tropical sun, these colors reflecting the greatest amount of heat. Munson says that for summer weather and in the tropics "clothing should be light both in weight and color" and that the dusty-brown "as exemplified by our khaki clothing" is the color "probably best answering both sanitary and military requirements under all circumstances." Castellani and Chalmers express a similar opinion.

As regards headgear there are many expressions of the opinion that it should be light in color. Speaking of the tropics Woodruff says "the only proper headgear for garrison use is the big opaque helmet of white or khaki.

In this brief consideration of clothing material no reference is made to fabrics protective against chemical rays because, first, we consider it by no means settled that such protection is needed, and second, if needed we believe that it should be obtained by putting the protective layer beneath the surface of the outer clothing either as underclothing or by means of a double weave as in Sambon's "solaro."

Radiation of Heat.—As regards the radiation of heat from the body the dark colors, such as black or blue, are the best and are said to be cooler than white for those who are not exposed to the direct rays of the sun. When so exposed the greater power of radiation from dark colors is more than counter-balanced by their still greater faculty for heat absorption. As regards military uniforms the matter of radiation is of little practical importance because at the time when radiation would be of most value (viz. in barracks and at night) the soldier is likely to be wearing only a part or perhaps none, of his outer clothing.

Atmospheric Temperature.—While the experiments with the uniform materials were going on frequent observations were made as to the temperature of the air, both in the shade of a freely ventilated room and in the bright sunlight out of doors. The difference in atmospheric temperature between shade and sunlight were not very marked, ranging from two to four degrees Centigrade. From a study of these atmospheric readings it became evident that any overheating from *external causes* to which one might be subjected when exposed to the tropical sun under the conditions obtaining during our observations would be due to heat absorbed from direct solar rays by the clothing and not to the temperature of the air *per se*. In these experiments the atmospheric temperature indoors ranged from 27.5° C. to 31° C.

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In bright sunlight the temperature of the air ranged from 31° C. to 37° C. averaging about 34° C. When exposed to the direct rays of the sun the temperature beneath olive-drab material, starting at atmospheric temperature, rapidly rose as a result of heat absorption and after the lapse of an hour or more reached figures from 48.7° C. to 52.7° C (108° F. to 126° F.). The atmospheric temperature remained unchanged. Beneath white drilling the temperature never rose above 38.4° C. (101.1° F.) and was usually below body temperature. This shows how great an influence color has and how little influence is exerted by the natural atmospheric temperature in the tropics.

Weight of the Two Materials.—No official weight of the two uniform fabrics being at hand the Depot Quartermaster measured 20 yards of the olive-drab material and found the weight to be 8¾ lbs. A similar amount of the Quartermaster's khaki weighed 8½ lbs. The olive-drab therefore weighed 2.9% more than the khaki. Two pieces approximately a yard in length and made as nearly as possible of the same area weighed, for olive-drab 197 gms., and for khaki 191 grams, a difference of 3.1%, which corresponds closely with the variation in the twenty-yard lengths. After washing and ironing these two pieces, the starching being as far as practicable the same for both materials, the olive-drab cloth weighed 205.5 grams and the khaki 202 grams, a difference of 1.7%.

Summary of the Experiments.—The four thermometers used for recording temperatures under the two fabrics were of the same size and make. They were tested at different temperatures and no variations in registering were discovered. In many of the experiments two thermometers were used under each material and in most instances the thermometers were reversed near the conclusion of each experiment before final readings were taken. In this way possibilities of errors in registering were eliminated. In all cases many readings, at short intervals, were recorded in each experiment.

Except in the helmet experiments the work was done with materials both laundered and unlaundered and no important differences were noted after washing. The experiments were divided into six main classes as follows:

(1) Experiments in which two thermometers were placed upon a white-covered table, one being overlaid with khaki and the other with olive-drab material. The table was then exposed to the sun for several hours. These experiments were carried out with the uniform ma-

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terials alone and also with the same materials when underlayed by a single thickness of muslin to represent underclothing. The readings were invariably higher under the olive-drab than under the khaki. The temperatures varied somewhat beneath different parts of the same fabric and at different times, these variations probably being due to inequalities in weave and dye, to variations in the intensity of the sunlight and the strength of the wind and to irregularities in the distance between the material and the table. For 28 readings the average difference in temperature below the two fabrics when the sun was bright was 2.03° C. or 3.65° F. On days when haze or clouds diminished the brightness of the sun the differences were less, the average for seventeen radings being 1.03° C. or 1.85° F.

(2) Experiments in which two flasks, each filled with 1,070 c. c. of water and containing thermometers, were covered, one with olive-drab and one with khaki cloth, and exposed to the sun for periods ranging from 1¼ to 3 hours. After a few minutes' exposure the temperature was invariably found to be higher in the flask covered with olive-drab material. For four readings made over a period of 85 minutes during a cloudy afternoon when the sunlight was not bright the average difference was 1.12° C. or 2.01° F. For eleven observations made when the sun was unobscured the average difference was 1.5° C. or 2.7° F. In these experiments much time was required, the temperature of the water rising very slowly and the differences between the temperatures in the two flasks growing progressively greater. With several hours more exposure the differences would probably have been more marked.

(3) Experiments with helmets when not being worn. Two of the Quartermaster's Department helmets of the same size were obtained and from one the khaki covering was removed and replaced by the olive-drab cotton uniform material. A diaphragm of pasteboard was placed within the hatband to occlude the lower part of each helmet as a head would do. Thermometers were introduced through slits near the tops and, supported by their front and rear visors on a white surface, the helmets were placed in the sun for periods of from one to three hours. The temperature within the helmets rapidly rose but the increase was much quicker and much greater in the case of the olive-drab headgear. For five observations made during three hours when the sunlight was dim because of haze the average difference was 1.52° C. or 2.7° F. During a period of two hours in bright sunlight the average difference in temperature was 3.45° C. or 6.22° F. At the end of the second hour the air in the olive-drab helmet was 4.6° C. (8.28° F.) warmer than in the khaki one, a most striking contrast. Repeated on another day in bright sunlight and with a good breeze this experiment gave approximately the same differences.

(4) Experiments on several men wearing a composite blouse, one-half olive-drab and one-half khaki. In one experiment the uniform material alone was used and thermometers were placed between the skin and the fabric. In the others a knit undershirt was worn and the instruments lay between it and the skin and were located over the scapulae. In some cases the thermometers were supported on corks so as to touch neither skin nor shirt. The men sat in the sun for periods ranging from 59 to 82 minutes.

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In none of these experiments did the visible perspiration, as shown by wetting of the garment, appear more marked on one side than on the other. Except for three observations, where the readings were equal, the temperature was always higher on the side covered by olive-drab. The findings on both sides varied considerably from time to time and at different spots in the scapular region, being influenced by the same conditions mentioned in the first class of experiments and furthermore by irregularities in evaporation of the perspiration. In a very few minutes after exposure, and thereafter as long as the sun continued bright, the temperature beneath both the khaki and the olive-drab was always found to be higher than the normal body temperature.

For seven readings when the sunlight was dim the average difference under the two materials was 0.33° C. or 0.59° F. For 32 readings made on days with bright sunshine the average difference was 1.03° C. or 1.85° F. The significance of these findings is discussed later.

(5) Experiments with helmets, referred to in class 3, when worn by two men sitting in the sun for one hour or more. These experiments were repeated on different days, a man who wore the khaki helmet one day being provided with the olive-drab one on the next. The men were of the same complexion, had equal abundance of black hair and their temperatures, taken at the beginning and close of the observations, showed nothing of significance. As in class three experiments there was ventilation of the helmets around the hat-bands and through the ventilating holes in the top.

The thermometers were introduced into the cavities of the helmets through slits near the tops and the contained air, afer a few minues' exposure to the sun, was found on all but two readings to be warmer in the olive-drab helmet than in the khaki one. On two observations the temperatures were the same for both helmets.

In eight observations made in dim sunlight, the average temperature was 0.67° C. (1.20° F) higher within the olive-drab helmet. Two observations made when the sunlight was brighter gave an average difference of 2.75° C. or 4.95° F.

An effort was made to find the temperature of the scalp by pushing the thermometer into the hair. The difference in the case of the two men was less marked in the hair than in the air above it and once a lower reading was obtained on the scalp covered by the olive-drab headgear. These observations were unsatisfactory because it was impossible to determine exactly where the bulbs of the thermometers were located. One might be in a layer near the scalp and cooled by evaporation of perspiration while the other, perhaps only half an inch away, might be affected by the heated air in the top of the helmet.

(6) Experiments with olive-drab, khaki and white materials. The white drilling used was as closely woven as the olive-drab and khaki materials, but was much lighter in weight. As these experiments were made on inanimate objects, where evaporation of perspiration was not a factor, it is not thought that the difference in weights materially affected the results. When exposed to bright sunlight the temperature below the white was found to be much lower than beneath the khaki. The differences between white and khaki were found to be considerably greater than those between khaki and olive-drab. It is a point worthy of note that the tem-

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perature beneath the white was *usually below* body temperature, and never above 38.5° C., while beneath khaki and olive-drab after a few minutes' exposure, the temperature was *always above* body temperature, reaching 46.6° C. for khaki and 49.2° C. for olive-drab.

For nine observations taken at intervals between 5 and 75 minutes after exposure to bright sunlight the average temperature was 42.4° C. beneath olive-drab, 40.9° C. beneath khaki and 35.2° C. beneath white.

No experiments were made with a white helmet but there can be no reasonable doubt that such headgear would absorb much less heat than a khaki helmet.

Inferences—It is obvious from the experiments of the first, second and third classes that the material of olive-drab color absorbs much more solar heat than does the khaki colored fabric. This is what would be expected after a study of the laws of heat absorption. The capacity of the darker material as a heat absorber is more marked with a bright sun than with dim sunlight. These experiments were carried out at a time when the intensity of the sunlight was not at its maximum because of haze, clouds and humidity. It is probable that during about eight months of the year (and especially during the hottest season) the greater heat absorption of olive-drab as compared with khaki would be more marked than it was found to be in this series of experiments.

After the men wearing the composite blouse had been exposed to the sun for a short time the temperature then and at all of the subsequent readings was found under both fabrics to be above the normal body temperature and very greatly above the atmospheric temperature. The experiments in classes 4 and 5 show that the differences of temperature beneath the olive-drab and the khaki when worn on the human body were less than when the same materials were applied over inanimate objects and placed in the sunlight. This is due to the well-known power of warm-blooded animals to maintain a fairly uniform temperature under varying conditions of environment. In the tropical sunlight when khaki or olive-drab are worn the thermic regulations must always be in the direction of thermolysis or heat dissipation. The fact that the body in these experiments was able to maintain its surface at approximately the normal thermic condition does not indicate that a heat absorbing garment for tropical use is as healthful for its wearer as one which reflects much of the heat. It cannot be doubted that, as compared with khaki, an olive-drab uniform will put a greater strain upon the heat regulating mechanism, the dissipation of the excess of heat being accomplished

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by greater evaporation of perspiration and greater respiratory action. The thermolysis will be accomplished mostly by more profuse perspiration. This will throw more work on the skin and the heart, will increase the necessity for the ingestion of fluids and may lead to renal and bladder irritation from a too concentrated urine. All of these conditions are undesirable.

With white drill garments the heat dissipating apparatus has to do little or no work for the purpose of eliminating absorbed solar heat, since the temperature beneath such material is rarely above 98.6° F. as shown in the last class of experiments.

Many thousands of observations on soldiers doing active duty in the Philippines while wearing khaki have shown that in a large number the temperature by mouth is frequently above the point which is considered normal in temperate climates. It seems reasonable to suppose that the use of a uniform darker than khaki will lead to a greater and a more general increase in the body temperature. Whether these elevations, ranging from 0.5° F. to 1.5° F. are persistent and harmful has not, as far as is known, been investigated. If persistent they are probably deleterious.

Summary.—From a consideration of the above facts it is the opinion of the Board that the new olive-drab uniform material is not a good one for use in times of peace in the tropics either for outer garments or for the covering of helmets. Khaki colored fabric is much cooler for both these purposes. Khaki is not nearly as cool as white drilling, but for other reasons, is better suited for garrison use. In campaign it is possible that the relative invisibility of olive-drab uniforms may compensate for their increased absorbtion of heat. For helmets in garrison in the tropics white covers would probably be found so very much cooler as to make their use, in association with khaki garments, desirable. From the sanitary point of view it can be stated that if any change is made from our present khaki colored uniform it should be in the direction of a lighter shade rather than a darker one. If any protection against chemical rays is needed (which is by no means proved) it should not be gained by using dark outer garments.

VISIT TO VICTORIA, HONGKONG.

During the quarter a member of the Board (Chamberlain) was ordered to proceed to Haiphong, French Indo-China, on the U. S. A. T. "Crook" which was sent there for a load of cement. *En route* several days were spent at Hongkong where the civil and

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military hospitals and the department of health were visited. At the latter much valuable information was obtained through the courtesy of Dr. Francis Clark, Medical Officer of Health. Of special interest was the problem of beriberi prevention. A large amount of beriberi develops in the colony but there has not been any at the jails since the use of an undermilled rice styled "Ordinary Straits Cleaned." The analysis of this rice show it to contain 0.74%, by weight, of ash and 0.4% of phosphorus pentoxide. Dr. Clark is of the opinion that if 0.4% of the phosphorus salt is present beriberi will not develop and that the use of rice more completely deprived of its pericarp and showing less than 0.4% of phosphorus pentoxide will result in beriberi. A rice more completely covered with pericarp and containing 1.34% of ash and .71% of phosphorus pentoxide was found to produce diarrhoea and gastric disturbances. Stained specimens of "Ordinary Straits Cleaned" rice show less pericarp adherent to the grain than is found on the rice for our new Scout ration.

An effort on the part of the sanitary department to induce the Colonial Government to prohibit the importation of polished rice was unsuccessful.

Plague.—Less than a dozen cases of bubonic plague have occurred in Hongkong during the present season. It has been learned that rats found dead by the Chinese were not turned over to the authorities because the native feared his house would be disinfected, so the following method of collecting dead rats has been adopted. Cans one-third filled with a disinfectant are placed at intervals of about 100 yards in the Chinese sections together with a notice requesting that rats found dead in the vicinity be placed in the can. When a rat is found at autopsy to be plague infected a quantity of rat poison made of phosphorus paste is distributed over the area adjacent to the can in which the rat was found. This plan has been proved to work very well and not to arouse opposition.

Malaria.—Although considerable effort is directed to mosquito prevention yet malaria, mostly of the aestivo-autumnal type, continues very prevalent in Hongkong and causes from 400 to 550 deaths annually from a total population of 343,877 (1909). The vast majority of the fatal cases are among the Chinese, occurring especially in the outlying villages and in Kowloon. The sanitary department requires that the home address of each patient sufferng from malaria be reported from the hospitals. The locations of such cases are recorded on spot maps and the premises of

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the patients are investigated, any mosquito-breeding places found in the vicinity being attended to. The screening of buildings in Hongkong is almost entirely neglected. Bednets are everywhere used by the Europeans.

Animal Parasites.—At the Government Civil Hospital Dr. J. Bell has been doing a large amount of work on helminthiasis and has made a series of beautiful photomicrographs of ova and parasites, copies of which he presented to the Board. He had on hand for demonstration specimens containing ova of many of the rarer worms and flukes. Among all patients (Europeans, Chinese, Indians and Japanese) he finds about 52% infected with some intestinal parasite, most commonly ascaris lumbricoides.

Laboratory.—The Bacteriological Institute under the charge of Dr. Macfarlane, is a solidly built two-story brick building, excellently finished on the interior, the walls being largely of white tile. This laboratory is well equipped and does a great variety of work for the health department. The examinations made there for plague infected rats are of interest as showing the percentages of infections in the different species and sexes.

Six months, July to December, inclusive.	Males examined.	Males, plague infected.	Ratio per 1,000.	Females, examined.	Females, plague infected.	Ratio per 1,000.
Mus decumanus	7,225	51	7.0	8,279	30	3.6
Mus rattus	3,936	54	13.7	4,045	31	12.6
Mus musculus	2,334	7	3.0	2,789	8	2.9

Military Hospital.—Sir Joseph Fayrer of the Royal Army Medical Corps was most courteous in showing and explaining the administration of the Military Hospital. This institution consists of several large and substantial three-story brick buildings and is located on a spur at a height of 443 feet above the harbor. Following the architectural plan so common in Hongkong, all of these buildings have been arcaded on each floor and on all sides. This gives excellent protection from the sun. The capacity of the hospital is 166 beds. The wards are large, well ventilated, and have ample cubic air space. As far as construction goes this hospital is much better adapted to the tropics than any hospital building in our service with which we are familiar. The equipment for wards and operating rooms is less modern than is the case in our military hospitals.

One thing of special interest at this hospital was the method of recording treatment and keeping track of syphilitics. For each

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patient with syphilis a printed blank is filled out and on this is recorded at stated intervals the treatment he is receiving with appropriate remarks as to condition. The same data are kept in a record book at the hospital. If the man leaves the post the paper containing the record of his case accompanies him to his next station. After he is considered cured the paper remains a year at his post and is then sent for file to the War Department, whence it can be obtained if at a later date he has relapse or sequelae. The importance of such a system in our own service has recently been emphasized by Captain Reasoner.

To be continued.

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REPORT ON THE 1910 CAMP OF THE DIVISION OF THE PENNSYLVANIA NATIONAL GUARD AT GETTYSBURG, PA.*

By Lieut. Colonel A. S. Stayer, Medical Corps, N. G. Pa.

IN compliance with General Orders No. 32, A. G. O., c. s., the several organizations of the National Guard of Pennsylvania encamped upon the historic field of Gettysburg from August 11th to August 18th, 1910,

LOCATION AND DRAINAGE.

The location of the camps of all of the commands composing the division was splendid from the sanitary standpoint. The ground was rolling and mostly sod with a gentle slope toward the rear of each regiment, troop of cavalry or battery of artillery, affording excellent natural drainage. There were a few instances where it was neecssary to establish drainage artificially. In all cases artificial drainage was required from water spigots and lavatories. This was accomplished successfully by digging a hole where the water dripped and filling this with small stones; from this point a ditch was dug leading toward the rear beyond the men's sinks. The most aesthetic as well as unique arrangement was made in the Second Regiment, where wooden sewers were constructed on a line with the water pipes in the rear of the company kitchens. This method is an excellent one where a camp is permanent, but in active service would be impracticable. It served, however, as an object lesson to all earnest inquirers for knowledge as to what should constitute good drainage. This command is to be commended for its earnest and painstaking labor in arranging this new and useful plan for camp drainage. Great care, however, is required to keep such sewers or drains open at all times. In all of the commands save one or two, the greatest care was exercised in this matter; in those instances where there was not sufficient interest manifested, the commanding officers were under the impression that the natural condtions were ample for good drainage. So they were in dry weather, but not so with much rainfall. Each officer whose duty it is to look after this should understand that too much care can not be exercised to provide for contingencies.

*Read at the 19th Annual Meeting.

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WATER SUPPLY.

The water supply was ample and of good quality. It was procured from the same source which supplies the town of Gettysburg, whose people very generously permitted its use during this encampment. A sample of the water used was sent to the State Board of Health for analysis and found to be perfectly pure. It was brought to the camp by a system of pipe lines and distributed to every command in subsiduary pipes. The drinking water for the men was put in barrels and these were located near the end of the mess tent next to the cook house. The barrels were placed on pegs over a small well, fitted with loose stones to provide for the drip from the spigot. Each man was required to use his own drinking cup when he desired to drink, so as to avoid possible infection. The lid on top of the barrel was kept locked, so that the men could not dip their cups into the water. The weather conditions were admirable during this camp. For the first few days dry and dusty but a heavy rainfall during the week cooled the atmosphere and laid the dust so that maneuvering became very enjoyable.

MEN'S QUARTERS.

The quarters and company streets were kept scrupulously clean. Not the least bit of paper or any other object of surface garbage was permitted to remain upon the ground anywhere. Officers and men together were enthusiastic in their labors and earnest desire to make this the best camp from the sanitary standpoint within the knowledge of the oldest guardsman. The doors of the tents were kept open at all hours of the day, and when the weather permitted the tent walls were tied up so as to have full and free ventilation of all parts of the quarters. The policing of the camp was in all instances performed twice a day and through the co-operation between commanding and medical officers every man became a sanitary police and exercised commendable care at all times in performing this important duty.

THE ARRANGEMENT OF CAMPS.

In all the commands the camp was arranged as in former years save in the First Brigade and the 18th Regiment of the Second Brigade. In these several camps the cook-houses and mess tents were located between the line officers' quarters and the men's quarters, instead of between the men's quaretrs and the latrines, as has been the custom in the guard for many years.

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This new departure is a little more in accord with Army Regulations, but not quite correctly so. The cook-houses should be placed between the officers' quarters and the mess tents instead of between the mess tents and the men's quarters. If such arrangement is made in all of the commands the dangers of breachs of discipline would in a large measure be obviated, as the line officers would have these quarters constantly under surveillance and thus would be able to exercise a closer supervision than formerly. Furthermore, the fly nuisance would not be quite so annoying because of the greater distance from stable and latrine.

FOOD AND COOKING

The rations issued consisted of all the best food the markets could afford and were sufficient in quantity. A daily inspection was made by the medical officers of all food stuffs and at no time were there any discovered that were inferior or tainted. There were no complaints registered by the men save in one instance. This came from the Fourth Regiment. A sergeant who was an independent butcher, started the report that a whole issue of meat to that regiment was spoiled. One of the surgeons simply glanced at the meat and took for granted that this butcher knew what he was talking about, so reported it to the colonel commanding who ordered the return of the issue. It was returned to the commissary and a board of survey was promptly appointed to examine it. This board was composed of the following officers: Surgeon General Colonel J. K. Weaver, Division Surgeon; Lieut. Col. A. S. Stayer, and Lieut. Col. S. W. Jeffries, of the Division Staff, who was in the meat business in Pittsburg. A careful investigation was made by this board resulting in the report that the meat was in a perfect condition. It was reissued and found to be excellent. The meats were procured from Armour and Company of Chicago, who had one of their best men on the grounds watching every issue, so that none but the best was supplied. Nearly all of the cooks are enlisted men. Great care is exercised in securing adepts in this art. Yet we occasionally find some careless and extravagant, but in all instances the food was well cooked, and the cook houses and mess tents were kept clean and orderly. Kitchen utensils were kept clean and an abundance of lime was scattered in and around these quarters.

BEDS AND BEDDING.

The private soldier in the national guard has for his bed the poncho or slicker and blanket and a bed-sack. If he is provided

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with a cot, as numbers of them are, the slicker is first put down on the cot then the bed-sack and finally the blanket. If he does not possess a cot he is directed to procure some sticks or anything that will serve to keep him off the ground. If nothing can be procured he, of course, makes his bed on the ground in the same manner as he does on a cot. Each day he is required to shake out the bed clothing, and if weather permits to place it in the sun for an hour or more. Some of the regiments in the division provide their men with cots, which is as it should be, as then the men are better able to keep themselves in a healthy condition. There are objections to the use of straw for bedding, especially if it is not thoroughly dried. If it gets damp it soon becomes mouldy and thus becomes a fruitful habitat for disease germs. During this encampment a number of men became infested with a parasite which caused swelling of the skin attended with a severe itching. These cases were found principally in those who were using straw in their bedsacks. In the Third Regiment a man was found who had a severe celulitis of the penis from a bite by one of the parasites. Well seasoned hay would be be a good substitute for straw.

DISPOSAL OF GARBAGE AND KITCHEN REFUSE

This material was disposed of by three different methods:

First, by incineration in kitchen fire.

Second, by the battalion crematory system.

Third, by garbage cans in which the garbage was placed until it could be carted away and buried.

The first named method seems to have been the most successful and least expensive. Some of the cooks or company commanders did not seem to comprehend the correct idea in the construction of these pits, notwithstanding all had been instructed as to the dimensions and method of arrangement required. The following explicit instructions were given by the surgeons of some of the regiments in circulars approved by their commanding officers. Others gave them verbally. The latter did not prove as effectual as approved circulars.

"For the purpose of disposing of garbage each company commander will construct a crematory or dig a pit (at a sufficient distance to the rear of the company cook-house) 5 feet in length, 30 inches in width, 3 feet depth at one end and 2 feet deep at the other end; this pit to be filled up level with stones to within 5 inches of the top, and the sides and one end of the pit walled up

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with stone or earth to a point 9 inches above the ground level. The pit will then be 14 inches deep from top of wall to stone floor of pit. The iron spider with which all companies are now equipped will then be placed over the pit, placing one end of the spider close against end of pit, where three feet excavation has been made, thus allowing the shallow end of pit to extend a foot past the other end of the spider. The legs of the spider or its feet resting on stone floor of pit. The dimensions of the spider are 3 feet 6 inches in length, 20 inches in width and the legs 20 inches in height, so that when in place the depth from top of spider to top of pit wall will be 6 inches, and a depth of 20 inches from top of spider to stone floor of pit giving plenty of space for draft and abundance of room for fuel."

All dishwater and other water accumulated in the kitchen was poured into the pit at the shallow end (where it extends past the limit of the spider), so as to get in contact with the heated stones beneath the fire where it is rapidly evaporated. All garbage was thrown directly on the fire where it was consumed. Such articles as empty cans, bottles, etc., were taken out and carted away after having been effectually burned out. No garbage was permitted to remain in and around the cook-houses, but immediately placed on the fire. The object in using the spider is two-fold; First, it provides a plant for the incineration of garbage, and, secondly, by its use the more cumbersome part of the cooking can be done, as it is large enough to hold a washboiler and two kettles. Garbage cans were provided or issued to some of the commands who used them almost exclusively, contending that they could not procure stones in sufficient numbers to properly construct the pits. The garbage was thrown into the cans and when filled they were hauled away by a farmer who used the contents as a fertilizer on his farm about two miles away. Complaint was made by neighbors of the farmer, to the local health officer, that the presence of the refuse was a menace to the health of the people of the community, whereupon an investigation was ordered by the division commander. The surgeon general, division surgeon and the local health officer made a careful investigation and found that the farmer was using proper precautions to prevent trouble from this source, by scattering the refuse along the ploughed furrow, then covering it with lime, and after ploughing down again scattering lime over the ploughed ground, thus obviating all danger of infection in any manner whatever. The manure from the stables was carted away twice a day by a farmer in the near neighborhood.

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The battalion crematory system was used by the 16th Regiment during the first few days, but this organization soon relinquished this method in favor of the can system, contents carted away to be buried. This is the only command that constructed the battalion pits this year. This method is also a good one, but more expensive than any other.

The three methods used this year have demonstrated fully and clearly that with proper care the use of the kitchen fires for garbage disposal, excels both the others for the following reasons: First, it is least expensive; second, the refuse is immediately placed on the fires, thus preventing the attraction of flies; third, with the solid refuse the liquid accumulations are easily and successfully disposed of without much effort.

DISPOSAL OF HUMAN DEJECTA.

It was expected that this material would this year be disposed of by incineration but the necessary plants could not be secured. Pits were therefore dug or latrines constructed as was done in former years. These latrines were constructed by the quartermaster's department previous to the arrival of troops, hence there was no excuse for polluting the surroundings. These trenches were dug about 5 feet deep, 12 or 14 long and 2½ feet wide. Over each was built a framework and upon this were placed regular privy seats. At each end there was placed a trough to serve as a urinal. Around all this was built a larger framework upon which was nailed muslin to serve as a screen. In making the excavation the earth was thrown to the rear in close proximity to the trench, so that it was convenient for use as covering of the dejecta. This was done twice a day, in connection with lime and crude oil as a disinfectant. So well has this been performed this year that all unpleasant odors were entirely eliminated in and around the latrines. At the close of the tour of duty the remaining earth was used to fill the trench.

DISEASES AND INJURIES.

It is highly gratifying to the medical officers of the division that the number of sick in camp has been gradually on the decrease for the past several years. In the division camp four years ago there were 136 reported sick and 34 injured. This year there were 81 reported sick and 19 injured.

These were distributed as follows:

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First Brigade, 18 sick and 3 injured.
Second Brigade, 10 sick and 2 injured.
Fourth Brigade, 21 sick and 7 injured.
Fourteenth Regiment separate command, 18 sick and 6 injured.
Cavalry, 2 sick and 1 injured.
Artillery, 2 sick.
The Signal Corps and Engineers reported none sick or injured.

Two of the injured and 20 of those reported sick sustained their disabilities previous to this tour of duty.

The regiment which had the greatest number of accidents was the 14th. There were no accidents in the 1st, 10th and 16th. The regiment which had the least number of sick was the 10th; there was but one reported. The regiment which had the greatest number of sick was the 14th. It had 18 sick and 6 reported injured. Next came the 4th; it had 17 sick and 5 injured.

Eliminating those who were sick or injured before going into camp, we have a total of 76 which is an exceedingly low percentage in comparison with that of former years. The circular sent out by the surgeon general which detailed all necessary provisions from the sanitary standpoint, expressed in emphatic language the request to bring none to camp who were in any way disabled; but notwithstanding this we have 22 such to record.

There was one case of gunshot wound of the left forearm (this was a slight flesh wound); nine cases of heat prostration; 33 affections of the alimentary canal; one of secondary syphilis; 3 chancres; 1 chancroid; 2 hernia, left inginal; 2 typhoid fever; and 1 hysteria. We note that there were 33 cases of disease of the alimentary canal. This undoubtedly was the result of eating indigestible foods purchased at the sutlers, drinking ice water when too warm, and indulging too freely in beer as was the case in the 4th Regiment, from which command the greatest number of stomach and bowel troubles were reported. There may be no objection to the use of this beverage, where proper restraint is exercised by the commanding officer. In this instance there was no systematic issue of beer, but a promiscuous indulgence at any time the men saw fit. This may account largely for the fact that this command stands at the foot in the results of the inspection of the sanitary condition of the division. There were 12 respiratory affections, 3 chronic appendicitis and a few other minor ailments. All were successfully treated in camp, except those that were infectious or contagious. These were promptly sent to their home stations for treatment.

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HOSPITAL CORPS.

The personnel of the whole corps is excellent. The members have good physique and splendid soldierly bearing. They were intelligent and conscientious in the performance of their duties. The corps is composed of graduated physicians, pharmacists and those engaged in the study of medicine or in other professional lines. The corps for each regiment is enlisted at the home of the senior surgeon so as to enable him to supervise drill and instruction in first aid and see that the men become proficient in all the duties incumbent upon them.

The greatest degree of proficiency was found in the 18th Regiment, and in the majority of the corps one could see that honest effort has been made to attain to as high a degree of efficiency as possible under the circumstances. The 3d Regiment's corps was composed of 3 physicians, 5 medical students, 1 painter, 1 hatter, 1 teamster and 1 clerk. This corps was also very proficient, but lacked somewhat of the snap that was so noticeable in the 18th. There is one ambulance to each regiment. This is kept near the hospital of such command, but there is no organized ambulance company. From what was said in the last camp we are happy to state that we may expect to have that organization in part next year, as well as a brigade or division hospital. The latter would take the place of the present regimental hospital, which will be utilized then as an infirmary. At present in camp each regimental detachment has its own mess and is quartered near the regimental hospital.

HOSPITALS.

The regimental hospitals were well equipped with the latest improved hospital material. Surgical and medical supplies were of the best and ample in quantity. No complaints were made by the medical officers of any shortage occurring during the camp. The supplies were issued through regular army channels and are similar to those of the regular service. The division was honored by the presence of the following medical officers from the regular army who were given the following assignments:

Major Hess, Second Brigade; Major Waterhouse, First Brigade; Major Grindell, Fourth Brigade. These officers were untiring in their work of giving all the information they found necessary for the betterment of the medical department of the guard. Several meetings of the medical officers were called by the surgeon general for the purpose of interchanging opinions and discussing questions of vital importance with the regular offi-

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cers. In this way we received from them as much as was possible in the short time that was available in an encampment where every medical officer was busy either with the sanitary work in camp or on the field doing his part in the maneuvers. A great deal of information was gleaned from these officers, but not as much as in an encampment of instruction for medical officers alone. Ceremonies and other obstacles naturally get in the way in a regular encampment of troops and these did not hamper the even flow of intelligent and superior instruction at Antietam last year. I feel sure that I voice the sentiment of all the medical officers from Pennsylvania who had the privilege of attending that 14 days of instruction who unite in saying that they were benefited more there than by several years of regular encampments.

BOOKS AND PAPERS.

There were five different blanks for reports, etc., issued to the medical officers previous to the tour of duty.

Form No. 4. Receipts for Medical Supplies.
Form No. 6. Requisition for Medical Supplies.
Form No. 7. Morning Sick Reports.
Form. No.— Morning Report of Diseases and Injuries and Sanitary Condition of Camp.
Form No.— Report of Completed Cases.

These seem to be all that are required for reports in an ordinary camp tour, but they do not accord with the forms used and issued by the Surgeon General's Office at Washington. Inasmuch as the state guard is now a part of the regular establishment it seems to me that all the papers issued to medical officers of the army should be issued similarly to the state medical officers in order that they may be in a position to familiarize themselves with the paper work and be in readiness for active service in this respect. All other departments are in perfect accord with the army and it is just as important to have it so in our department. It is true that the medical officer in the guard has nowhere to keep his books and papers except in some private receptacle. Often such material is lost or mislaid so that it seems necessary that a field desk filled with precisely the same material should be issued to the senior officer of regiments, squadrons of cavalry, and of all other separate bodies of troops.

In conclusion, I cannot refrain from referring again to the excellent sanitary conditions of this encampment throughout its whole period. This speaks volumes for the medical officers of the

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division who are all in regular and active practice at their homes. These officers have most prominent positions in the Commonwealth. Many of them are connected with hospitals and occupy other important places. We found them enthusiastically doing their utmost to bring about as nearly perfect sanitary conditions as possible. In no previous encampment were greater efforts made to excel. That they succeeded admirably was well demonstrated from every viewpoint. After the various commands had left for home, upon riding over the ground previously occupied by the troops there could be seen but little evidence that there had been a camp there but a few days previously. Every vestige of rubbish had been removed, and all pits had been carefully filled up. Such results could only be attained by perfect co-operation between commanding and medical officers. This has come after years of persuasion and education along sanitary lines. Very important, too, in bringing about these excellent results was the strong circular issued by the Surgeon General, coupled with Order No. 6 from Division Headquarters, making each battalion commander responsible for the sanitary conditions of his own battalion. Battalion commanders with medical officers made daily inspections of the whole camp.

DISCUSSION.

Lieut. Col. J. T. Lynch, Surgeon General, N. G. Va.

Colonel Lynch, commenting on the paper and on the encampment, called attention to the unprepared condition of the ground. The troops were hampered, he said, by delays and inefficiency on the part of the quartermaster's department. The incinerators were not working properly, and the civilians who had promised to keep them in condition were not forthcoming. The regulars, he said, had not done their part.

He said too much was expected of the National Guard when the camp had not been so planned and organized so as to allow them to do good work.

It appears that following the return of the troops from Gettysburg, nine cases of typhoid fever developed, with one death—that of an officer.

This, however, was as nothing compared with the infection among Troop A of the Maryland Cavalry, in which twenty-eight cases, or more than one-third of the total membership, developed. This infection, it appears, was traced to an infected spring just below the ground where the Maryland Cavalry was located.

Colonel Lynch thought it would be best to have the members of the National Guard stay in their own States, and to be instructed there by officers of the regular army.

He pronounced it as his deliberate judgment that the $40,000 expended in maintaining the Virginia troops at Gettysburg had resulted in practically no benefit.

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Major G. H. Halberstadt, N. G. Pa.

In addition to what has been said concerning the kitchen garbage crematory, the most important thing is to burn the garbage as it is made, and that all cans be flattened with a maul before being put in the fire.

Col. L. M. Maus, Medical Corps, U. S. A.

In reply to Col. Lynch, Va., Col. Maus stated that he was not at Gettysburg or Antietam and not able to personally state the condition of camps from his own knowledge. But he is sure that few of the National Guard is sufficiently equipped to undertake to run the Medical Department of their own troops. None or few of them have field hospitals, ambulance companies, or well organized hospital corps. None of the incinerators so far furnished the army are entirely satisfactory, not being perfected. I would not recommend the separate maneuver camps for the National Guard and Regular Army until the National Guard becomes thoroughly equipped for the field.

Major Truman A. Parker, Medical Corps, N. G. Va.

I wish to emphasize the criticism of Colonel Lynch as regards the Q. M. Department at the Gettysburg encampment and add to his expressions of appreciation of the excellence of the Medical Corps as demonstrated at the same place.

The 1st Virginia Infantry arrived July 1st and found no device for destroying garbage, though one crematory for the whole camp was completed several days later. The incinerators for dejecta were technically finished, but in many cases an inch or two of water was present in the firebox. The camp was on a clay soil, and no screening for kitchens and no lumber for shacks, garbage can stands and the like could be had; no oil or lime, and frequently cord wood was unobtainable. The Medical Corps instructors were particularly capable and courteous, and I and my assistants were particularly gratified at the benefits which accrued to us, officially, professionally, and personally.

Major H. I. Jones, N. G. Ind.

I feel that I can not let this opportunity pass of voicing my appreciation of the combined maneuvers. Our troops went into camp at Fort Benjamin Harrison on the first day of the maneuvers, and I wish to say that we had everything we needed and there was absolutely no trouble when it came to getting everything. We have been going to different camps for years and have taken advantage of the opportunities to learn the new methods. We have used the incinerators and have found them satisfactory and very easily manipulated. I should as soon think of living in a house without a bathroom and without water in the house as to live in a camp without incinerators.

I am of the opinion that if we do not get what we need it is because we do not go after it in the proper manner. Now if we do not learn how to get these things no one can put it in us. We must learn it for ouselves.

Again, I wish to express my belief in the value of joint maneuvers.

Lieut. Col. A. S. Stayer, N. G. Pa.

In one of the regiments in the 2d Brigade the latrines were entirely closed

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by putting hinge lids on the seats and all crevices or openings were closed up with lumber and earth. This was done to entirely darken the pit with a view of keeping out the flies, the surgeon of that regiment also contending that extreme darkness would eliminate all odors arising from fecal matter. I can not quite agree with him that this would in a great measure obviate the necessity of using disinfectants for it is not possible to keep the place in total darkness at all times.

In 1898 the late General John A. Wiley, who was then in command of the 2d Brigade, 3d Division, 1st Corps, had latrines constructed upon the same plans, but it was necessary then to use lime or crude oil to properly disinfect and kill the annoying odors.

A barrel of lime was then placed near the entrance to the latrines and after each man had eased himself he was required to put a small bit of lime upon the deposit. This seemed to work very successfully for we remained there for several months without much trouble from this quarter.

In several of the commands urinal cans were placed at regular intervals in the company streets at night for the accommodation of the men, thus obviating to a large extent the dangers of voiding urine promiscuously in and around the quarters.

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LESSONS LEARNED AT A MANEUVER CAMP.*

By Major Charles D. Center, Surgeon, 5th Infantry, Illinois National Guard

THE 5th Infantry, Illinois National Guard, was ordered to report on September 21st for 10 days' instruction at Fort Benjamin Harrison, Ind. The 5th being composed of companies from various cities of the state, it was considered advisable to entrain in two trains, the nucleus of each train being at (1) a north central point and (2) a south central point. The north central point was Peoria and the south central was Quincy. The Quincy train left the home station at 8:30 p. m., September 20, 1910. It had on board the regimental band, company F, and eight members of the field and staff. No further additions were picked up until Springfield was reached, where there was added company C, the Gatling platoon, and the hospital corps. There were also taken on the cars of horses for the officers' mounts and horses for the Gatling guns, with all the tentage and baggage for the regiment. We took on also a number of large cases of overcoats for the enlisted men, for these had not been issued to the men of all the companies previous to this time. Then at Decatur we picked up company H and company B. At Danville a car with company I was added. This completed the train, and we reached Fort Benjamin Harrison at 10 a. m., September 21, within 30 minutes of schedule time. I may say in passing, because it does not imply any immodesty on my part, that the men on this special were detrained, drew up in their various organizations, and marched to the camp ground within twelve minutes after the train had stopped. The other special, with its nucleus at Peoria, came in on schedule time. This train carried company A of Pekin, D of Bloomington, G and L of Peoria, K of Delavan, M of Canton, and E of Clinton. The Quincy special was under command of Colonel Wood, while the Peoria train left under the command of Major Summers, but at Danville was joined by Lieutenant Colonel Hill, who took over the command. These trains were made up of tourist sleepers for the men and a Pullman on each train for the officers.

*Read at the 19th Annual Meeting.

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Breakfast was served from a baggage car on each train, a squad from each organization passing forward in turn and carrying back to its organization Frankfurter sausage, rolls, hard-boiled eggs, and hot coffee. In this way breakfast was served very satisfactorily and expeditiously.

Before leaving the home station and on the way over the men were instructed in raising the Sibley tents, and before 1 p. m. every company had established camp and had had noon mess. The officers did not fare so well, and we at regimental headquarters were glad to get our first meal at 2:30 p. m.

The medical department of the 5th Illinois consists of Major Center, Captain Clotfelter, Captain Wilhelmy, and Lieutenant Eckard, with a hospital corps of 19 men and 2 sergeants. Shortly after reaching our camp grounds we were visited by Captain Owens, Medical Corps, U. S. Army, who, speaking for Colonel Maus, the chief surgeon, informed us that we were expected to detail one medical officer to the field hospital and one to Major Hartsock, the chief sanitary inspector. Dr. Eckard, who had very recently received his commission and who felt the need for instruction, was sent, at his own request, to the field hospital, and Captain Wilhelmy, because of my knowledge of his ability as a sanitarian, was detailed to the office of the chief sanitary inspector. All but one sergeant and four privates of the hospital corps were sent to the field hospital with Dr. Eckard. With the five remaining men of the hospital corps we established the Regimental Infirmary. Orders were to send all sick men who were unfit for duty to the field hospital. Let me say in passing that the 5th did not send a man to the hospital during the ten days of instruction. Two men from the 5th were taken there, one who fell from exhaustion during parade—the parade ground being nearer to the hospital than to regimental quarters—and the other a man taken with violent intestinal cramps while out on a hike. This man was found lying in the woods by a mounted line officer, who promptly galloped to the field hospital near at hand, and a litter squad carried the sick man in. Each of these men from the field hospital reported to his company for duty the following morning. During the entire period of instruction we had but five men sent to quarters for light duty, and no one of these was so restricted beyond a period of twelve hours. The prevailing troubles were, naturally, those of the stomach and bowels. In spite of the fact that orders were issued by Colonel Wood that no vendor of pie, sandwiches, ice cream, melons, etc., should be al-

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lowed to ply his trade in camp, on two separate days such peddlers did get in, and one or two companies purchased stuff before the peddler was discovered and run outside the lines. In each instance we had an increased number at sick call the next morning, and it was noted that the increase came entirely from the companies which patronized the peddler.

Let me interject here that Colonel Maus told me, during the last day in camp, that the troops on the ground during the ten days we were there had given so low an amount of sickness that it had been impossible to figure out a percentage. The troops referred to, beside my own regiment, were the 10th Infantry, U. S. Army; the 26th Infantry, U. S. Army; the 6th Cavalry, U. S. Army; a detachment of U. S. Engineers, a detachment of U. S. Signal Corps, the Michigan Signal Corps, and the 2d Michigan.

One reason, I believe, for the low rate of sickness and for having practically every man on duty every day was the order issued by the chief surgeon of the Department of the Lakes that every enlisted man must pass a satisfactory physical examination within 24 hours prior to leaving his home station. This order was observed in every company except one, and in this company we are now trying to fix the responsibility for its not having been done. Out of 676 examined but 11 were declared physically unfit. One man taken to camp was found unfit and sent home. The examination at the home station was for sore throat, coated tongue, history of stomach or bowel trouble, and gonorrhoea. Naturally, if evidences of any other pathologic condition presented themselves, these were considered also. Another fact that was observed during our stay at the fort was that those companies under best discipline and best drilled furnished the fewest men at sick call. One company in particular which was looked upon with disfavor by the other companies, because of the inefficiency it exhibited and because of its low morale, furnished three men at sick call for each one from any other company. The one man sent home was from this company.

We feel that we were fortunate in being at camp when Colonel Maus, Major Hartsock, Major Baker, Captain Owens, and Captain Davis, all of the medical corps, U. S. Army, were there, for their cordiality immediately removed any feeling of embarrassment we had, and their enthusiasm and apparent pleasure in the work fired our zeal. More than this, the work appealed to us as being so very practical. We had heard of red tape, of paper work which was Greek to the national guardsman—and certainly

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we did stumble over it at first, but in all the routine there was the reason therefor plainly apparent, and in each instance such a satisfactory, sensible reason that it appealed to us. Of camp sanitation we of the 5th had a good competent idea. Of the methods of ease and simplicity in carrying our ideas out we were lacking. The three G. I. garbage can system is simple, and where the liquid garbage can be handled with wagon and pump, as at Fort Benjamin Harrison, nothing could be more satisfactory.

One suggestion was given me by Captain Wilhelmy, our representative detailed to the sanitary inspector, which is so good and so practical that I wish to indorse it and recommend its adoption, i. e., the appointment of a sanitary sergeant in each company of the regiment. We found that the quartermaster sergeant either could not or would not enforce orders relative to the care of the kitchens, company streets, quarters, and garbage cans. The first sergeant was too busy in other ways to attend to this. The cook either could not or would not enforce orders relative to garbage. The orders for sanitation do not appeal to them. Many of these orders probably seem puerile, as they do not know the underlying reasons therefor. More than this, it is human nature, at least as found among the men of a company in a regiment of the Illinois National Guard, to prefer to do a thing in the easiest way, and some orders relating to camp sanitation about a company mess tent and quarters mean work for those in charge. A sanitary sergeant who had been instructed in sanitation and hygiene during his year at the home station could be held responsible by his medical officer for the sanitary condition of his company. He would furnish something impossible for the medical officer to supply, the presence practically all the time of a sanitarian with authority for that company. It is possible, perhaps, to make a sanitary sergeant for each company out of a hospital corps man while the regiment is in camp. But the sanitary sergeant should be with his company all the time. The hospital corps man, if taken from the hospital corps and put with a company, would feel that his organization is broken up and would lose interest in his own corps. More than this, it is likely that his presence, with authority in the company, would cause friction, whereas one of the enlisted men of the company would escape this source of trouble.

Maneuvers with troops of the regular army are particularly beneficial to the members of the national guard, because of the enthusiasm of the guard for this kind of instruction. When a regiment goes into camp for one week's tour of duty, especially

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when it goes to the same camp year after year, the men have no enthusiasm except for having a good time. Such a camp means as much fun as can be made, and fun only, for the enlisted man. He does not expect to learn much, and often he learns even less than he expected. In a maneuver camp he knows he is going up against a new game. This game is made more real and is more like real war than anything he has ever seen, and he works like a dog and enjoys it all the time. The hospital corps men of the 5th were so eager to get into the game that one day, when a battle was to be fought some two miles away from camp, they requested to be allowed to go out in full outfit, each squad carrying a litter, so that they might get into the game as realistically as possible, and over an almost impassable trail, through the woods, into ravines, up steep hills, and wherever the troops went these men went, each one carrying his hospital corps pouch and each two men a heavy litter—and a litter does get heavy after the first half mile. They got out on the firing line and picked up their wounded and carried them back to deep cover in a ravine. Those same men never would have done it, except under compulsion, under the ordinary conditions existing from year to year at Camp Lincoln, Springfield, Ill. The knowledge that the rank and file were in the game, the presence of the regulars, who had seen and done and felt the real thing, and the enthusiasm of such men as Captain Paul Malone and Captain Manus McCloskey, U. S. Army—who were instructors and umpires with the 5th Illinois—made all our men eager and anxious to learn and to feel as nearly the real thing as possible.

One other thought which is apropos at this meeting is this: The regular army needs the national guard. The need exists for at least two reasons. One, the guard, as now maintained, managed, and instructed, can, in case of need, hurriedly augment the number of troops of the regular army. Two, because the members of the national guard, living as they do in civil life, meeting as they do from day to day with the lawmakers of the land, can bring great pressure to bear upon these lawmakers in matters of favorable legislation for the army and navy. Per contra, the national guard needs the regular army for at least two reasons. One, for the instruction which the guard cannot get elsewhere. The regular army should be and is in the position of teacher for the guard. Two, because under present law the War Department at Washington can bring more pressure to bear upon those in authority at the capital of each state than any one, or ten, or one

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hundred individuals of the national guard can bring in compelling the state to comply with the requirements of the law in equipment for its portion of the guard. I mention this because the 5th Illinois was sent to this camp of instruction outside of its own state into camp with troops from other states as well as troops of the regular army, and the medical department of this regiment had as equipment absolutely nothing except the hospital corps pouches of the men, six litters, a little gauze, a little absorbent cotton, a few bandages, and less than twenty dollars worth of drugs. Not an instrument should it have been needed, not a basin to wash either the hands or a wound should there have been one, not a thing for emergency use should an emergency have arisen. The fault does not lie with me, for there was a requisition in 90 days before going to camp for a full equipment for a Regimental Infirmary. Nor does the fault lie with the Adjutant General, but it does lie with the State of Illinois for tying the hands of the Adjutant General. It is true, the outcome of our trip proved that we did not need much in the way of supplies, but if we are going to act on this principle it would be just as consistent to withhold the guns from the enlisted men until there was actual war or riot, where the guns could be used. So I say that, just as the National Guard from the ranks of civil life can be useful to the Army and Navy, so can the Department at Washington be of use to the Guard in bringing pressure to bear on each state to compel that state to comply with present law in the matter of equipment for its state troops.

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REPORT OF THE CHIEF SANITARY OFFICER OF THE DIVISION, CAMP OF ILLINOIS NATIONAL GUARD, AT PEORIA, ILLINOIS, 1910.*

By Major Daniel W. Rogers, Medical Corps, N. G. Ill.

THE annual tour of duty of the Illinois National Guard for 1910 was a division encampment at Peoria, Ill., August 20 to 27, in which all military organizations of the state took part, with the exception of the artillery battalion, which had its practice at Sparta, Wis., July 1 to 10, and the 5th Infantry, which was assigned to duty at Fort Benjamin Harrison, Ind., September 21 to 30. The organizations represented in the division camp comprised 7 regiments of infantry, 1 regiment of cavalry, the signal corps, and the field hospital, a total of 5,122 officers and men.

Site.—The camp occupied a space 1½ miles long by ½ mile wide, near the Illinois river, five miles north of Peoria. Here heavily wooded bluffs rise steeply from the river to a height of two or three hundred feet to a rolling plain, which slopes rather sharply to the southwest. It is broken by deep ravines and clumps of woods along its northern and eastern edges and is open to the west, affording good drainage.

Soil—The soil is a clay loam, easily becoming a light powder when dry and very sticky when wet. Because of this, great efforts were made to locate all camps on turf, a somewhat difficult thing to accomplish, because of the numerous large patches of cultivated ground, which in two instances forced the use of stubble fields for a portion of the regimental camp. Weather conditions, however, were excellent and no trouble arose from this cause.

Water—The water supply at camp was excellent. Peoria city water was used, which is drawn from dug wells, 15 to 20 feet in diameter and 40 to 60 feet deep, which cut through the overlying clay into a water-bearing stratum of gravel. Frequent analyses, chemical and microscopical, of this water have shown it to be most excellent. The city main was tapped near the reservoir, which was close to the camp, and water was pumped by two direct-acting

*Read at the 19th Annual Meeting.

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pumps, taking steam from the boiler of an old traction engine, into a pipe line which extended throughout the camps, furnishing water to the various messes and to the shower baths. The maximum amount required was about 250 gallons per minute, with a minimum of almost zero during the night. The site of the various regiments, pipe lines, shower baths, and latrines is shown on the accompanying map. [Not published.] The camp site had been partially prepared before the arrival of troops by the laying of the water pipes, digging of latrine-pits, and the erection of shower baths. Electric lights were placed at headquarters and telephone lines run into the adjutant's offices.

Latrines.—Latrine-pits had been dug, four to each regiment—three for the line, one for officers—at a distance of 30 to 50 yards from the rear line of tents, the shorter distance being caused in some cases by the nature of the ground. Pits were dug 2 feet 2 inches wide, 13 feet long, by 6 or 7 feet deep, covered with a box of pine boards 14 feet long, 3 feet wide, 1 foot 6 inches high, having fourteen seats with board covers. The whole was surrounded by a muslin screen stretched on 4x4 posts. At the end by the entrance urinal troughs of galvanized iron were placed, draining through sewer pipes directly into the pit. The details of construction are shown in the accompanying plan. [Not published.] These latrines were extremely satisfactory. Several points, which were called to our attention by carpenters' mistakes, may be noted in the construction:

First.—That the 2x4 foundation of the box must be placed flush with the inside board, that there be no ledge for the retention of urine.

Second.—That the 2x4 project outside from the bottom of the box to help cover in any broken edge of a pit.

Third.—Spring hinges to the covers should be used, and the closing of the covers may be made more certain by a strip of board, nailed lengthwise of the box, of such width as to prevent the cover being raised absolutely perpendicular.

Fourth.—The screens should be about 22 feet long by 14 feet wide.

Fifth.—The distance of 4 feet between the muslin screen and the end of latrine should be sufficient to prevent the screen being set on fire. A not too lavish use of oil is recommended for the same reason.

Sixth.—A 14x21 fly may be stretched over the latrine. This will furnish some protection from rain, and it is better not to

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have the inclosure completely covered, but to permit the free entrance of sunlight and air.

Each morning the boxes were lifted to one side, the inclosure policed, straw or dried grass and crude oil thrown into the pits and burned. From 1 to 8 quarts of crude oil were used at each burning, the amount depending on the necessity of the case and the judgment of the one in charge. About 3 quarts should be sufficient for each pit at each burning. This burning of crude oil consumes all waste paper and crusts over the feces so that flies are not readily attracted. The ordinary practice has been to put lime in the urinal trough, but as this seemed quite as attractive to flies as the urine alone experiments in the use of lime and oil were carried. In the 8th Infantry, in particular, no lime was used in the latrines or urinals, but the urinal troughs were swabbed at least once a day with crude oil and the pits burned, as before described. Frequent inspection of the latrines through the whole week showed almost entire absence of flies or odor. On few occasions only was a fly observed within the inclosure, and never was one seen on a urinal trough.

Garbage.—It had been recommended that a garbage crematory should be built of the Jamestown type, but for some reason this recommendation was not carried out. A contract was made for the removal and cremation of all garbage by the proprietor of a crematory. This contractor had evidently entered into the contract without due consideration of the amount of garbage to be removed and of his facilities for the performance of the work. ed with unremoved garbage. Investigation showed no hope of an At the end of the second day the camp was being rapidly swamp- with unremoved garbage. Investigation showed no hope of an increase in the contractor's facilities or of improvement in his methods of carrying out his contract, so that the disposal of garbage finally devolved on the medical officers. Time was too short for the building of a crematory, and recourse was had, as an experiment, to the latrine-pits. The garbage uncollected by the contractor each day (comprising about three-fourths of the total) was dumped into one of the latrine-pits and burned over with straw and crude oil, a different pit being taken each day. The pits were in constant normal use also, and the conditions were closely watched, so that, if necessity demanded, the pits might be filled up at once and new ones dug.

It is worthy of note that in spite of this double use of the latrine-pits for a period of five days there was no bad odor, ex-

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cept in the case of one pit, where a slight odor was observed. Fewer flies were observed within the inclosure than could be seen at almost any moment in the fields outside. The almost complete absence of flies where the crude oil was freely and carefully used, a little crude oil being sprinkled on the ground where liquid garbage had splashed, was most remarkable.

Stable manure was to have been hauled away by contract. But, as usual, the contractor failed, and the stable refuse was simply raked into a convenient pile and burned. When burning, for any reason, was impossible, the rake was used, and when the stable manure was raked out to one side and allowed to dry no flies bred in it.

Shower Baths.—Shower baths were erected beyond the line of sinks and at one side, being simple platforms, with feed pipes extending the length of the platform, from which upright pipes, eleven or twelve in number, each fitted with stop-cock, rose to a height of 7 feet and were fitted with sprinkler heads. A muslin screen, similar to the latrine screen, was placed around this bath, and a 14x14 tent was pitched at one side to be used as a dressing room. Baths were placed so that waste water drained readily into one of the numerous ravines. These shower baths were in constant use and added materially to the comfort and well being of the men. Roofing of the baths is quite unnecessary and useless, for rain does no harm and sunshine tends to keep the platform dry and discourage the flies. There were two baths for each regiment.

Tents.—Men were quartered, so far as possible, in Sibley or conical wall tents, which seemed more satisfactory than the "A" tent, and slept on sacks filled with straw. Gold Medal cots would have been much better, and where it is possible their use is to be recommended. It is to be noticed that, while those sleeping directly on the ground in some instances were afflicted with chiggers, those sleeping on cots had no such trouble.

Food.—The food was of excellent quality. The army ration was furnished, which, as in the regular service, was increased slightly in a few particulars, such as fruit or fish, by voluntary purchases from the company funds. One complaint only was heard regarding the food. One regiment found its meat, on one day, fresh killed and tough in consequence.

Hucksters were forbidden inside the camp lines, and those outside the camp who sold lemonade, pop, and "red-hots" were rigidly inspected and made to keep their premises in proper order and their food of proper kind and quality.

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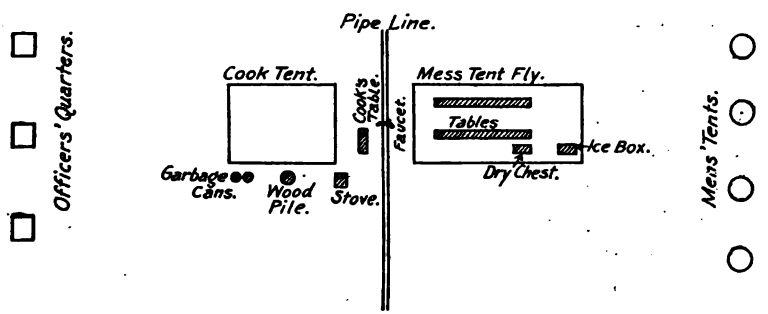
Ice —The ice used was partly artificial and partly natural. It is advisable that artificial ice be used when possible, unless the natural ice is known to be of first-class quality, for it is almost impossible to keep the men from using ice directly in the lemonade and cold tea.

Canteen.—Very little difficulty was experienced with the liquor question. This was left mainly with the regimental commanders, with the understanding that the use of liquor in general be discouraged. Companies were allowed to buy beer and keep it in a barrel in the camp kitchen, whence it was issued, a bottle or two bottles per day, to each man; in consequence, there was little drinking, and but one case of intoxication came under my personal observation—a camp cook, who had begun his celebration before starting for camp. This had its effect on the behavior as well as the health of the men. There were no cases of "morning after" and practically no prisoners; none at all from drunkenness or absence without leave. Very few cases of disorderly conduct were noted. While passes were granted to visit the town, these were comparatively few, and men seemed content to spend their leisure hours in camp.

Kitchens —The regiments showed a great variation in the appearance and convenience of camps. In some the company kitchen was arranged according to the individual predilection of the quartermaster sergeant.

A uniform arrangement of company kitchens, mess tents, ice boxes, and garbage cans should be followed. Such a plan as is here outlined might be convenient:



We followed the rule of sinking the ice boxes in the northeast corner of the mess tents. A pit was dug to the depth of the ice box, the bottom then filled in for three inches with brick or pieces of wood—anything to raise the ice box from the bottom

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and allow drainage for waste water. A gunny sack was then thrown over the top of the ice box. This insured the longest possible use of ice. Meat was kept in trays off the ice, milk in a covered vessel, and butter, eggs, and cold boiled potatoes only were permitted to be kept in the ice box. Onions, pickles, melons, and similar articles were rigidly excluded. This was a matter requiring constant instruction and rigid inspection, for the inevitable tendency of a company cook seemed to be to keep onions, melons, milk and butter in the same dish.

Suggestion.—In any plan of company kitchens it is advisable to put the garbage cans in full view of the officers' quarters. They should be whitewashed and lime scattered on the wet spots around the kitchen. The disposal of waste is one of the most important things and should be constantly under the officer's eye.

Sanitary Sergeants.—The work of sanitation was greatly assisted in some of the regiments by the appointment of sanitary sergeants. A sergeant, generally the quartermaster sergeant, was detailed during the year from each company to act as sanitary sergeant and received instructions from the regimental officers in the simple rules of ordinary camp sanitation and personal hygiene. It was easy to see which regiments had carried out this plan, and it is recommended that this custom be made a rule. One regiment in particular had been instructed by lectures by the regimental medical officers during the year, and it was a pleasure to observe the interest and rivalry of the men in sanitation and the almost perfect camp which was the result.

Health.—The health of the men was excellent. There were no cases of epidemic intestinal trouble or, in fact, of any intestinal difficulties which could have been avoided by improved sanitation. A few cases of acute colic, from a melon and beer combination, were the only ones observed. Blisters, sore feet, a few accident cases, and constipation constituted the main part of the sick.

The report of the field hospital shows that 125 cases were admitted; of these 2 were of civilians with arm fractures. The 123 cases comprise:

Minor injuries, 20; sprained ankle, 6; foreign body in abdominal wall, 1; cellulitis of lower jaw, 1; traumatic gonitis, 1; appendicitis, 2; punctured wound of foot, 1; insect bites, 2; dermatitis venenata, 3; folliculitis, 1; carbuncle, 3; cervical adenitis, 2; skin infection, 5; hordeolum, 1; injury to testicle, 1; hernia, 2; constipation, 17 (should have been attended by regimental dispensary); toothache, 3; conjunctivitis, 5; acute articular rheumatism,

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7; tonsillitis, 5; pharyngitis, 3; hay fever, 1; hysteria, 2; acute gastritis, 10; diarrhoea, 4; heat prostration, 3; gonorrhoea, 3; la grippe, 2; rhinitis, 1; headache, 2; epilepsy, 1; pleurisy, 1; lumbago, 1.

The usual number of blisters appeared, due to newly issued shoes. Every camp shows an inordinate number of men with blistered feet, due to new shoes. This is a matter in which an improvement easily could be made. At present shoes are issued new, are worn during camp, and returned to the quartermaster, where they are practically lost or much of their value is lost during the year, and there is much dissatisfaction dependent upon their issue, for no man likes to wear second-hand shoes. This difficulty could be obviated if shoes were sold to the men at the regular cost price, to be their private property. Then the government would lose nothing, and the soldier would be equipped with a proper pair of shoes, well broken in for work.

Venereal diseases give little difficulty in camps of this length. Men so afflicted are of no value to the working force and cannot readily be segregated in the field hospital; therefore, by long-standing custom in Illinois, known cases are not permitted to go to camp and in those that arise during the tour the individuals are sent home at once. In such cases the men should not be allowed in any way to become a charge on the state.

Orders were issued at the close of camp for regimental surgeons to keep track of the men, so far as possible, and report to the division surgeon all cases of sickness, especially typhoid fever, observed during the month following camp, which might be attributable in any way to camp life. The reports thus far received show no such cases.

Conclusions.—If any valuable points on sanitation have been made in this camp, they are those connected with the disposal of garbage, the system of latrines, and the use of crude oil.

While incineration is unexcelled from a sanitary point of view, we found it impossible to purchase and install incinerators.

The system of latrines which was used worked with as near perfection as could be desired. For a short camp of a month's duration, I see no reason why the pit latrine, as used in Camp Deneen, should not offer a perfect solution to the problem of the disposal of fecal matter. It merely needs attention and crude oil.

Too great emphasis cannot be laid on the excellent results which followed the use of crude oil in destroying odor and preventing the breeding of flies. This was particularly true in the use of

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crude oil in the urinals. The swabbing of the urinals with crude oil keeps away flies and should be used invariably to the exclusion of lime.

The disposal of garbage should be in charge of the sanitary officers and is most badly handled when done by contract. The Jamestown pit is an excellent means of getting rid of camp waste. For short tours of duty a simple pit, burning with crude oil, and burial is cheap and effectual. The greatest difficulty seems to be the collecting and handling of the garbage cans. Few national guard regiments have their own transportation, and it is difficult to carry a can by hand from the company kitchen to the pit without spilling more or less of the contents. We are considering the use of a low two-wheeled cart, similar to a painter's hand cart, sufficiently large to carry four cans at a time. This would facilitate gathering the garbage twice a day, or, better still, after each meal, and this would make the camp easily independent of the civilian contract.

It would be unfair to close this report without due acknowledgement of the enthusiastic and self-reliant cooperation of the regimental medical officers, without which the excellent results shown in this camp could not have been obtained.

DISCUSSION.

Captain H. D. Thomason, Medical Corps, U. S. Army (Div. of Militia Affairs, War Department).

It was my fortune during the past summer to visit eight joint instruction camps, an opportunity that has been accorded to few medical officers of the army, though I was not sent out to observe or make observation pertaining to sanitary conditions, but to observe and obtain data pertaining to the field efficiency of the medical department of the organized militia.

The first camp I visited was Gettysburg. Now, we are not proud of sanitary conditions at this joint instruction camp at Gettysburg. I can say without reservation that from a sanitary standpoint it came nearer to being a failure than any of the camps I visited. But it is only fair to place the blame where it belongs. At Gettysburg the medical department had no power. It simply inspected, reported deficiencies, and made recommendations for correction; it was up to some one else to make the much-needed corrections. In other words, the medical officer was in reality not the sanitary officer. The function of that officer was largely in the hands of the quartermaster, who for some reason or another signally failed to meet sanitary conditions. Unfortunate and humiliating as the situation was, it was not without its value and lesson. It taught medical officers, both Regulars and National Guard, that we have to hustle and be able to meet emergencies and make the best of unfortunate situations. It was but history repeating itself, that wherever the medical department has not power within itself to direct correction of sanitary faults, but must depend upon the quartermaster's department to secure it, nine times out of

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ten failure results. If Col. Lynch of the N. G. of Va., who so severely criticised sanitary conditions at Gettysburg in the discussion of Col. Stayer's paper this morning, could have accompanied me to the 7 other joint camps this summer I am sure he must have felt differently, and I want to assure him that he must not take Gettysburg as a model. The other camps from the sanitary standpoint were all satisfactory, though these results were obtained by various means and methods is the result of my observation. I am convinced so far as pertains to the disposal of kitchen wastes the ideal method is the kitchen crematory—one to each company organization—the pit crematory which can be used in connection with the new range recently issued to the old Buzzacot oven, with which with very little care and experience the company cook can take care of all wastes. I understood Col. Hoff, the chief surgeon at the joint maneuver camp at Pine Camp, N. Y., say that two years ago at the same place the garbage can, hauling away, and distributing in a large pit crematory was in vogue. The cost of apparatus, transportation, fuel, etc., amounted to something over $12,000. This year all costs pertaining to kitchen crematories amounted to something over $4,000.

As to disposition of excreta, I believe the incinerator if properly looked after is a success. Every camp is a law unto itself, depending upon conditions and means on hand. Crude oil is certainly a success in keeping flies away.

Venders of fruits, soft drinks, vegetables, etc., should be excluded and all such business be conducted through camp exchanges subject to inspection and control of the sanitary officer.

Capt. A. B. Bennet, Jr., Medical Corps, N. G. D. C.

My only criticism about the camp of instruction at Gettysburg is the little time that was allowed the medical officers of the National Guard to look after the sanitation of their respective camps. I was attached to the 2nd Infantry, N. G. D. C., and we were at Gettysburg during the last period of instruction of that encampment. We arrived there in the early part of the afternoon of July 19th. The regiment was marched to its camp site and then came the baggage. It took practically all of the remaining afternoon for the men to get under canvas and establish their kitchens and obtain their commissary supplies. It was late before mess was ready, and they were ready for taps before it was blown. Soon after our regiment detrained the medical officers were met by a medical officer of the army who told us that our camp site had been polluted and abused and was far from sanitary and that the incinerators were working badly; he also explained the construction of the kitchen crematories and directed the building of them at once. The medical officers then visited the Chief Surgeon's Office and were presented to Col. Keefer, Medical Corps, U. S. A., who informed us that the camp water was polluted; he also told us that our first duty was to attend the school of instruction that was to commence the next morning promptly at 8 o'clock.

As I have explained, there was no time on the first afternoon to do anything about the kitchen crematories or any other sanitary measures as the incinerators were being fired by civilians. From that time on our routine was breakfast at 6, sick call at 6.30, when we had about fifty men to look after which easily occupied us for an hour and a half, then lecture from 8

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o'clock until noon, lunch at 12.30, and from 1.30 to 4.30 or 5 o'clock in the afternoon we were attending map reading exercises or tactical rides—then dinner at 5.30. I fail to see how any more than a very casual sanitary supervision of our own camps could be expected of us under such conditions. Furthermore, the colonel of our regiment was impressed with the want of attention we gave our camp and was chagrined by receiving notice from headquarters about the slowness of his regiment in conforming to the sanitary requirements, especially regarding the crematories. You can readily see we were in an embarrassing position trying to serve two masters. The incinerators and kitchen crematories were absolutely new to our men and regarding the crematories the order with a wrongly worded printed instruction about the construction was certainly not enough information for green men to understand and obey. Even when the pits were dug there were no rocks to fill them with, and it took a day or two to get a wagon from the quartermaster to bring in rocks from adjoining fields, because all the wagons were being used hauling firewood. It seems to me that under the circumstances of that Gettysburg camp when sanitary measures were so eminently necessary it would have been better if on the first afternoon we had received careful instruction in the required sanitary measures and allowed the following day or two to see that sanitary apparatus was installed and understood and operated in an intelligent manner. It would then have taken very little time to see that it was kept in proper operation, and we could have given plenty of time to lectures and tactical rides, which I think are a most valuable part of the instruction given at the combined maneuvers.

Major H. A. Arnold, N. G. Pa.

There is apparently a seeming misunderstanding as to principle of construction of spider crematory. Make pit deeper at one end—not to be walled up, fill in with stones to a height above ground level, and bank up with excavated earth. Place spider on stones, wall up two sides to height of spider (this to conserve fuel; also to protect cooks from heat of fire). The present form was evolved from apparatus used in Pennsylvania Guard for six or eight years and is the best and most satisfactory of numerous plans tried out in the regiment to which I am assigned.

At my suggestion Captain Burton, 29th Infantry, U. S. A., put it into effect at the maneuver camp at Gettysburg, Pa., last summer, and it was so satisfactory that a regimental order was issued directing its general use.

A full description of this method will be found in the "MILITARY SURGEON" of a few years ago, when I presented a paper in which I gave a diagramatic description of its construction; also results of its use by the Pennsylvania Guard in its annual camp of eight to ten days.

Major H. D. Jones, N. G. Ind.

I have never criticised the digging of pits, but when we go into camp at Fort Benjamin Harrison the first order we get is one absolutely forbidding the digging of any pits on the reservation. So we are compelled to adopt other measures. Now we have destroyed all the garbage in our kitchen stoves. The liquid garbage was evaporated in the Lewis and Kitchen Incinerators a little at a time, and the solid garbage was burned in the kitchen stoves. The cooks must be trained to strain the garbage separating the wet and the dry and then they can very easily destroy both kinds in the manner indicated.

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THE ARMY AND THE NATIONAL GUARD FROM THE VIEW-POINT OF A NATIONAL GUARD OFFICER.*

By Major H. I. Jones, Indiana N. G.

DURING the recent maneuvers held at Fort Benjamin Harrison, the possibility of this country engaging in war in the near future, was frequently discussed, and the statement was as often made, that the actual fighting force, which could be immediately called into the field, would amount to about 230,000 men.

These men are, in theory, ready to put on their uniforms, pack their equipment, shoulder their guns and march out as the first line of defense. This line is composed of two parts. The regulars, who follow the profession of arms as their vocation, and who number about 80,000 men, and the National Guard, who follow the war game for recreation and who number about 150,000 men. These two forces make up our army as it stands today.

Those of us who have been in the service for many years can not but see that a great change has taken place in recent years in the relations of the two services. Not many years ago, the regular officers tolerated the militia officers, but as for admitting that the latter knew anything of soldiering, such an admission was entirely unheard of; and within the last five or six years, the request of National Guard Officers that non-commissioned officers from the regular regiments be detailed with National Guard troops in the same camps for the purpose of instructing the latter, was objected to by the company officers of regulars for the reason, as they gave, that the morals and discipline of their men would be seriously impaired by association with the Militia.

Note the change. At the recent maneuvers such intercourse was encouraged, non-commissioned officers of regulars were detailed for duty with state troops, the men of the state troops were frequently sent to the regular regiments, thereby increasing their companies to war strength, and the patronizing air was replaced by one of actual comradeship and mutual respect. We naturally ask what has caused this change which has taken place in the last few years. Has it come about because the army, realizing that they are small in numbers, know that in the event of trouble they must rely on state troops to support them, and, therefore, have determined to make them as proficient as possible, or is it

*Read at the 19th Annual Meeting.

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because the officers of the Guard by work and study have made themselves worthy of recognition as a part of the army and are only receiving the fruits of their labor?

Which of these conditions, or if either of them has prevailed matters not, but the fact that such feeling exists today between the two services, cannot be denied, and this is, especially pleasing to the members of the National Guard, because we have always looked up to the gentlemen of the regular service as our instructors in this work.

Indeed, I might say that to the National Guard the Army is an *older,* but not *larger* brother from whom we expect to receive instruction and correction, and whom we intend to help out of any trouble he may get into.

If such is the existing relation between these two parts of the first line, it behooves us to perfect ourselves in every part of our work in order that we may be thoroughly prepared when the call comes.

To be thus prepared, officers of the Guard must do double duty. First, we must earn our living and, not being so fortunate as to look forward to retirement on pay, we must earn and put aside a competency for old age.

After doing this, we must, then, perfect ourselves in our military work without any compensation and frequently at a pecuniary loss; and the standard set practically requires that the National Guard Officer shall be just as thorough and just as able as is the officer of the regular establishment who is paid for doing this, and this *only*.

A standard which imposes hardship on the National Guard Officer, but which must be accepted by us, if we are not to be found wanting when the test comes, and one to which no member of the National Guard has ever objected. How to attain this standard, is the paramount question. By following in the footsteps of our older brother and first learning well our part thorough preparation being necessary for the faithful performance of any duty.

In the event of a great war and the calling to the colors of an army of half a million of men, every one knows that the supply of regular officers to fill the high executive positions would soon be exhausted. We may suppose that the next ones to be trusted in high places would be Guard Officers.

If this should be true, we must be prepared to do the work, and we must prepare ourselves. It is up to each National Guard

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Officer to make good by his own efforts if he has any hope of being given preferment. The regular officers, even if they were sufficient in number to be detailed for that purpose, cannot stuff knowledge into our heads. Each officer must dig it our for himself in his own way. To go to camp each year and ride his horse on parade, giving no thought to military work in the interval, is not sufficient.

The army was full of doctors in uniform in '98 and all know the result. To avoid a repetition of such conditions, should be our constant aim and endeavor. To do so, we must all do our part, taking advantage of every opportunity offered by state and government for our instruction. But then the fact that different standards are set by the different states may result in varying degrees of efficiency.

Inasmuch as it is a fact that when the call to arms comes, we shall cease to be state troops and shall become at once National troops, the federal authorities should have more direct supervision of the National Guard. The men should be uniformed, equipped and paid by the government. The Federal authorities should prescribe the qualifications for officers and should make sure that they are efficient, taking into consideration the fact that we are citizen soldiers, and must devote the greater part of our time to our own pursuit. Pay and allowances should be the same as the Regular officer receives for time given to the service or schools of the government.

It is my earnest belief that the time must and will soon come when we of the Medical Corps of the different states will be under the direction of the Surgeon General of the Army. He will prescribe our course of instruction and determine our fitness for promotion. When such supervision shall be in force and when all departments of the Militia should be thus equipped and trained, when in other words we shall be a Federal Guard and shall have compulsory enlistment and service of one term of three years on the part of every young man in the country, then, and then *only* shall we be a National Guard in fact as well as in name, ready to march at any time to the defense of our country.

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FLAT FOOT: A POSSIBLE CAUSE OF BACK-ACHE.

By First Lieutenant Eben C. Hill, Medical Corps, U. S. Army.

THE cause of back-ache as tabulated by authors on diagnosis are so extensive that it is, perhaps, inconsiderate to the general practitioner to even suggest that he burden his mind with still another possible explanation of this unpleasant symptom. If Butler (1) is consulted, a very graphic illustration points out the following possible explanations for lumbar and sacral pain; lumbago, fatigue and debility, pleurisy, flatulence, loaded colon, appendicitis, hernia, dysmenorrhea, floating kidney, tumor or parasite of kidney, renal calculus (one side) lithaemia and gravel, hydronephrosis, pyelitis, pyonephrosis, perinephritic or lumbar abscess, embolism of kidney, acute nephritis, vesical calculus, prostatitis. cystitis, ischio-rectal or perneal abscess, abdominal tumor, lumbar neuralgia, malarial fever, variola, and other infections, disease of the ovaries and uterus, pelvic inflammation, disease of the testicles, excessive venery, ulcer or cancer of the rectum, hemorrhoids, disease of the sacro-iliac joint, disease of the hip joint, sacral neuralgia and sciatica. Accordingly the physician has a very wide range of choice, and if his diagnosis is based on an exclusion of all but one of these causes, he can expect to start on the treatment of the case at a future time when the patient has become quite accustomed to the pain.

If the practitioner be a specialist in gynecology as, for instance Garrigues, then of course this array of causes may be somewhat reduced in number and we will perhaps find that these pains in the back are classified under "rheumatism, strains, neuralgia, sacro-iliac disease, caries of the spine, fracture of the spine (especially of the coccyx), hemorrhoids or other rectal disease, pendulous abdomen, disease of any of the internal pelvic organs and cellulitis of the uterosacral ligaments." (2)

I most fully appreciate the length of Butler's list because in several cases that have lately come to my notice, I have met with a persistent back-ache which continued after treatment based on a diagnosis obtained by exclusion. About a year ago, however, I discovered that one possible cause for lumbar and sacral pains is not mentioned, and it is this neglected cause which has given me

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the title for this brief paper. Why flat foot should produce pain in the back alone is difficult to say. That the loss of the plantar arches should give rise to imperfect transmission of the body weight can well be understood, but why in certain instances the pain should be felt only in the back and not in the feet, legs or thighs is hard to decide. The attention of a physician would naturally be directed to the plantar arches when he encounters a history of pain in the feet and legs which appears after walking. This is, of course, a common history where talipes planus exists, but that flat feet could cause severe pains in the lumbar region without any distress being felt in the feet, legs or thighs is, I believe sufficiently unusual to warrant a summary of three cases.

Case No. 1.—H. J. Male, 43 years old, date of examination August 15, 1908. Family history negative. Personal history negative except for being a moderate drinker. Physical examination shows a heavy, well built man, strong, muscular; has led an out-of-door life. Pain over left kidney is noted on deep pressure, ankles and feet swollen, and arches of both feet are flattened. Otherwise physical examination is negative. Clinical examination—Blood: White cells, 8,200; Red cells, 5,100,000; Hb. 90% Sahli; Urine: yellow, clear, S. G. 1.019, acid, slight trace of albumen, no sugar, microscopical emaxination shows a few hyaline casts. Patient complained of feet and back which had lasted for several years. These pains came on after walking, but his feet were much less painful than his back. He had been treated for rheumatism and renal conditions. Was much worried because he feared that the pains in his back were from his kidneys.

Treatment: Advice as to diet and danger of continuing the use of alcohol, and arch supporters were ordered.

Result: Pains in back and feet have disappeared and there has been no recurrence during the past two years. Condition of the kidneys is reported as being somewhat improved. No medicine has been taken, so without doubt the disappearance of these pains can be attributed to the arch supporters.

Case No. 2.—This report is detailed somewhat more fully because this patient was as near normal, except for pains in his back, as could be desired. R. S. K. Male, age 36, examination made March 17, 1910. There had been no appreciable gain or loss in weight. Family history; father living and well—has suffered from rheumatism. Mother dead, is reported to have had rheumatism. Otherwise family history negative.

Personal history; married, one child. Patient's general health excellent, bowels regular, has had measles, whooping-cough, mumps, rheumatism (?), malaria, and has not had tonsilitis, diphtheria, typhoid, pneumonia nor pleurisy. Has had no headaches, earaches, fainting nor vertigo. Has not suffered from chronic cough, bronchitis, shortness of breath, profuse expectoration,

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hemoptysis, night sweats, oedema, pleural pains nor palpitation. His appetite has been good, eats slowly, has had no jaundice, bloody vomit, bloody stools, hemmorrhoids nor abdominal pains. Drinks small amount of coffee and tea daily, but no alcohol. Has not had excessive nor frequent urination, does not pass urine at night.

Present Illness—Began to notice pains in back about a year and a half ago. There was no pain or discomfort in any other region. Pain is described as a dull ache, exceedingly painful during the day and particularly noticeable during any exercises requiring the use of the legs and feet. Toward evening after a day spent in walking or riding horse back, pains become almost unbearable and patient is forced to rest. Has resorted to hot applications and supporting plasters to back. Has used various rheumatic drugs, but without relief.

Physical examination: Patient is a well built, muscular man of healthy complexion and erect carriage. Physically normal in every respect except for marked flattening of planter arches. Deep pressure over lumbar and sacral regions where pain has been located shows no painful or [illegible]

Clinical examination of [illegible]ne, blood and [illegible]s shows nothing abnormal.

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Diagnosis; Talipes p[illegible]nus. [illegible]atment, [illegible]rches for feet.

Result: Absolutely no pain or discomfort sinc[illegible] March 19, 1910, the time when the arches were first used. D[illegible]ing the past few months the patient in his capa[illegible]y officer has been attending the army maneuvers and has had to walk 15 to 18 miles on many occasions. The patient has been enabled to walk farther and with less fatigue and no pain since using these arches.

Case No. 3.—Mrs. S. P., age 36, examined August 15, 1910.

Family history negative except for rheumatism in grandmother.

Personal history; married, 2 children, 5 miscarriages (intentional). Periods regular, bowels regular, urination frequent, General health, good, has had measles, whooping-cough, mumps, rheumatism of back (?), malaria, and pneumonia. Has had headaches, probably due to eye strain. Blood, urine and feces negative.

Physical examination: Patient is a large fat woman of 180 pounds. Physical examination is negative except for prolapse of uterus, pendulous abdomen, weakened perineum and partial obliteration of arches of feet.

Patient complains of very sharp severe pains which began about a month ago. This pain is located in right leg extending from hip to foot and is so intense that patient is unable to walk, and can not sleep much at night. There has been a dull ache in back for a longer period but this, while uncomfortable, has not caused the distress that the present pain has produced. Patient has been treated by electricity and massage, and has taken medicine internally for sciatica.

Diagnosis: Sciatica, prolapsus uteri, and talipes planus.

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Treatment: Fifteen cubic centimeters of sterile normal saline solution were injected into the sacral canal by the Cathelin method. As was predicted by Cathelin in his reports of similar treatments, the pain ceased almost at the instant that the injection was begun. This patient left the hospital an hour after her treatment, and had no pain in her right leg, although she still complained of back-ache.

On August 22, she returned to the hospital and reported that there has been no recurrence of the pain in her right leg, that she had walked daily but that the ache in her back had increased.

Arch supporters were ordered. Since using them, there has been no pain or ache in her back, she walks with no discomfort and does not become tired after much longer walks than she had been previously able to take.

As far as the specifications or models to be sent to the orthopedic shoemaker are concerned little need be said. There are many excellent articles describing various ways of making casts of deformed feet as well as for taking accurate measurements. Forbes (3) and Fitzsimmons (4) very clearly outline methods which I have used with success. Feiss (5) also gives a means of determining the height of the arches and this method I have found quite useful.

Except in instances where there is some secondary deformity or a need of ankle supporters, I have not found it necessary to have shoes or arches especially made. Any of the better grades of commercial arch supporters can be easily adapted to uncomplicated cases by making slight changes in the height or width of the metal plates. For the purpose of diagnosis, when there is not marked flattening of the feet or when this flattening is not readily apparent, I usually resort to the old and fairly accurate use of blotting paper. The patient having dampened the feet, is instructed to step firmly on a colored blotting paper. The resulting impression gives a clean cut area indicating the degree to which the arch is weakened.

Summary:—Unfortunately, this series of cases is not sufficiently extensive to be used as a basis for any broad deductions. In Case 1, the pains in the back had been supposed to be due to a renal condition, and the patient received the appropriate treatment for this condition. In Case 2, similar pains had been diagnosed as arising from rheumatism or lumbago. Case 3, might have undergone an operation for prolapse of the uterus. The operation is undoubtedly indicated, but the backache, which was the symptom that caused discomfort, disappeared under less radical treatment. Hence from these cases, few as they are, it would seem that in

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treating pains in the lumbar or sacral regions, the condition of the plantar arches warrants a certain amount of attention.

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ANKYLOSTOMIASIS.*

By Captain Clarence L. Cole, Medical Corps, U. S. Army.

ANKYLOSTOMIASIS is said to have been known, at least, 1,500 years before Christ (1). The description of symptoms and treatment of the disease are given in Ebers' papyrus.

The disease was discovered by Piso, in Brazil, in 1648, (2) and the medical literature of a number of countries appearing between this date and that of the discovery of the parasite by Goeze, (3) in 1782, bear evidence of the knowledge of a more or less general distribution of the disease throughout tropical countries during this period.

It was not until 55 years later (1843) that the parasite causing this disease was removed from the human intestine, by Dubini, while performing an autopsy. He named it Ankylostoma Duodenale.

In Egypt, the disease has been recognized for many years, and is there known as the Egyptian Chlorosis, and, at times, there have been epidemics of the disease attending large engineering undertakings, as that of the St. Gothard Tunnel epidemic, which renewed the interest of medical men in the disease and the parasite causing it.

The disease has received many names because of the fact that several outbreaks have been prevalent in engineering undertakings, which afford favorable opportunities for dissemination of the infection, or that the disease is more prevalent in persons following occupations which facilitate infection by reason of subjecting the individual to the larvæ under the most propitious circumstances for contracting the disease.

Some of these names given by Osler are "Egyptian Chlorosis, Brickmakers' anemia, Tunnel anemia, Miners' cachexia and Mountain anemia."

I have given this list for the reason that it is the writer's desire that this paper, through directing attention to this disease, may assist in clearing up the obscurity which may have surrounded some case of indefinite malaria or jaundice or dyspepsia that has not yielded to treatment as it should.

*Read before the Nineteenth Annual Session of the Arizona Medical Association, by permission of the Surgeon General, U. S. Army.

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The climatic conditions of Arizona are, certainly, not such as would be conducive to the spread of this disease throughout a large number of inhabitants as has occurred in some portions of the United States. But it is not impossible that the disease may be present in some of the mines of the Territory where the ova may have been introduced by infected persons.

The disease has a special name in nearly every country in which it is found, but the numerous English names that point it out as a miners' disease indicate its prevalence among men following this occupation, and it seems very unlikely that infected miners from other localities have not introduced the disease into Arizona.

I have been unable to find reference to any cases of this disease in Arizona, yet it has been reported from Texas, Mexico and Southern California.

W. C. Alvarez, writing of the prevalence of the disease in Mexico, calls attention of the physicians of this territory (Arizona) to the possibility of the prevalence of the disease in the following language: "Granting, then, the importance of this subject in the United States, it may be of interest to the physicians of California, Arizona, New Mexico and Texas, especially, to know that across the border there are endemic foci of Ankylostomiasis."

It was not until 1893 that the first case of Ankylostomiasis was discovered in the United States. This occurred in St. Louis, observed by Blickbahn (4) or Blickbahn (5). Ten years later, when Capps reported a case of the disease, there had been just fifty-one cases recognized.

Prior to the description published by Stiles, in 1902, of a new species of hookworm (Necator Americanus), it was thought that all cases of this disease occurring in man were due to the Ankylostoma Duodenale (Dubini).

In less than 10 years this disease has been found to be so prevalent in some portions of this country as to be the cause of a physical and mental degeneration of many of the inhabitants of these localities so marked as to have been considered, characteristic, almost racial.

Many generations of infection with the hookworm are now known to be the cause of the shiftlessness, ignorance, lack of physical development and lack of energy, characteristic of the poor white of the South.

The knowledge of this disease has become so general, and the disease found in so many localities, that at the recent Hookworm Conference, held at Atlanta, Ga., discussions were conducted by

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men who had treated hundreds of cases. Meanwhile, two American physicians, Ashford of the Medical Corps, U. S. A., and King of the Public Health and Marine Hospital Service, have personally, and in conjunction with their associates of the Porto Rico Anemia Commission, treated thousands of cases, and proven that thousands of people were dying annually from the disease in Porto Rico.

Uncinariasis has been found so prevalent among all classes of the South as to have its influence upon the physical development to such an extent that the recruits for the Army of Southern birth are found to be inferior physically to the Northern bred men of the same age. Chamberlain (6) found 60% of Southern bred recruits to be infected with the hookworm, yet apparently in good health but under-developed. Again, in one class of medical students of a Southern college 30% were found to harbor the parasite.

THE PARASITE.

The hookworm is represented by many species, some of which are parasitic upon dogs, cats, cattle, sheep, horses, seals, etc., while there are two species of the parasite that cause the disease in man. These are the Ankylostoma Duodenale (Dubini) and Necator Americanus (Stiles).

I attempted to secure specimens of the Old World variety of hookworm for exhibition at this time, but was unsuccessful; and the only specimens I have for exhibition are the New World species, Necator Americanus. These are from cases reported by the writer occurring in the Philippine Islands and were the first of this variety reported in these islands (7).

Garrison (8) has, since, confirmed this report and finds that the infection with Necator Americanus is almost universal in the Philippine Islands.

The female uncinaria infecting man are from 10 to 13 mm. in length and .5 to 1 mm. in diameter, those of the Old World variety, Ankylostoma Duodenale, being larger than the Necator Americanus. They are generally greyish white in color and their bodies slightly curved somewhat like the letter S.

In case the parasite has ingested blood it may present a dark brown appearance. The male parasite is smaller than the female and is readily distinguished from the female by the presence of a terminal enlargement known as the caudal bursa. The same

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characteristics as to relative size of the male parasite of both varieties is preserved as for that of the female.

The principal characteristics which differentiate the two varieties of the parasite, other than size, are in the mouth parts, position of the vulva in the females and difference in caudal bursae of males.

The measurements of the Ankylostoma are as follows: 8 to 11 mm. in length by .4 to .5 mm. in breadth for the male and 10 to 13 mm. in length by 1 mm. in breadth for the female.

The following measurements of the Necator Americanus were made of parasites recovered from cases treated in the U. S. Army Hospital at Manila, P. I.:

Females, shortest,	10. mm.	Longest,	13.5 mm. (1 specimen).
Males, shortest,	7.25 mm.	Longest,	8.5 mm.

In the Old World variety the mouth, or buccal capsule, is armed with four distinct hooks and two conical teeth (8), while in the New World species the hooklets are replaced by ventral and dorsal pairs of semilunar plates and two pairs of submedium lancets as well as a dorsal tooth.

In the Old World variety the yulva of the female is in the posterior 1/3 of the body, while in the female of the New World variety, the yulva is situated in the anterior 1/3 of the body.

Following measurements from the Philippines specimens: "The ratio which length of head to vulva bears to the length from the vulva to the tip of the tail" is as follows:

No. 1, 1:2.32 No. 2, 1:2.43 No. 3, 1:2.29

The caudal bursa of the male of each species is characteristic: Within the bursa are a number of fimbriae, known as rays. The dorsal pair of rays within the caudal bursa of the Old World variety are not divided to their bases, and the tip of each ray terminates in three digitations; while in the New World variety, the dorsal rays are derived to their bases, and they terminate in bipartite tips. Other rays within the caudal bursa differ in the two specimens, but the preceding characteristics are the most marked and serve to distinguish specimens most readily.

THE OVA.

The ova of uncinaria are interesting and easily distinguished in microscopical specimens when their characteristics are known. As finding the ova is the only positive evidence of the existence of the disease in light cases, their recognition is very necessary.

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The ova are never bile stained, but clear and hyaline. They are oval in outline, having a distinct capsule of two layers. The protoplasm may be observed in any stage of segmentation, or development may have progressed to that stage that the living embryo may be seen within the egg. The stage of segmentation found or the development of the parasite, depends upon the time intervening between that of passing the stool and that of the microscopical examination.

The following measurements of ten uncinaria ova isolated from the author's case give the approximate size of ova of Necator Americanus:

1, 72 x 40; 2, 62 x 38; 3, 58 x 42; 4, 73 x 52; 5, 58 x 43;
6, 68 x 36; 7, 68 x 38; 8, 62 x 38; 9, 68 x 38; 10, 62 x 42.

The ova of the Old World parasite are slightly smaller than the measurements given above.

Of the ova found in the stools of individuals infected with intestinal parasites, the three most common varieties are those of Trichocephalus trichiurus, or whip-worm, Ascaris lumbicoides and the hookworm (Ankylostomum and Necator). The first two varieties are bile stained, that of tricocephalus shaped like a tea tray while that of Ascaris has a very rough shell.

The technique of microscopical examination of feces of individuals suspected of having the disease is simple. An oese full of the suspected fecal matter is added to a drop or two of normal salt solution in the center of a slide and the cover glass applied with enough pressure and lateral motion to insure a preparation of sufficient thinness to allow examination of the entire preparation. After having formed a clear mental picture of the ova the specimen may be hastily searched by using a 2/3 objective. Then carefully observing any suspected object with the 1/6 objective. But if the observer is not familiar with the object sought a slower but more certain method is to use the 1/6 objective, searching the entire specimen. This simple technique will serve for detecting the ova in all but the mildest infections or for examining stools after treatment to determine whether or not treatment may have expelled all parasites, provided that a sufficient number of slides have been examined. More complicated methods have been devisd by Bass (10) and others (11), whereby the number of ova may be collected from large portions of fecal matter nearly or quite free from other sediments.

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LIFE HISTORY OF PARASITE.

Two periods of existence are known for this parasite, one is extra-corporeal while the other is intra-corporeal. The ova are passed from the parasite and evacuated by the patient in the feces. The ova are, in early stages of segmentation, never as embryos.

The ova soon hatch (twenty-four to forty-eight hours) and pass through a number of developmental stages. Smith found that they cannot infect human beings until they are four days old. Then when applied to the skin, after a very few minutes, a stinging sensation was felt by the patient experimented upon; and upon removal of the material in which the larvæ were contained, when applied to the skin, the skin was found to be reddened. This reaction had not followed similar applications of the larvæ containing paste upon previous days.

ANKYLOSTOMIASIS.

Formerly this was thought to be a water-borne disease, but since discovery by Loos (13), it is now known that the disease is generally transmitted by the parasite gaining entrance to the body through the skin. Access is rarely, if ever gained by the alimentary canal. Ashford and King (14) found that 96% of their cases in Porto Rico, had suffered from the ground itch and the well shod rarely suffered from the disease.

Manson (15) gives Loos' statement that the Ankylostoma embryo would be digested if taken directly into the stomach and that the worm must have passed through a "stage of preparation" before it can resist the gastric juices.

All experimental cases have shown a characteristic cutaneous eruption following the application of the larvæ. This eruption is the "Mazamora," ground itch or dew itch known in countries where the hookworm disease is common, and it was not until the middle of the seventh week after the appearance of this rash in Smith's case that the ova of the hookworm were found in the stool.

It has been suggested that the tonsils and pharangeal mucous membrane may be the means of entrance of the parasite when present in water.

The progress of the larval hookworm from the skin to the intestine is, according to Loos (16), as follows: The embryo enters the skin through a follicle and gains access to the blood stream, then reaches the lungs where it passes through the delicate alveolar wall and gains access to the air passages. Along the

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trachea, the embryo climbs until it has reached the esophagus to arrive ultimately in the small intestine.

SYMPTOMS.

The symptoms of Ankylostomiasis present so many confusing pictures that examination for ova of the parasite will reveal the causes of many obscure and confusing complaints, as they can always be found if the patient is suffering from this disease. The next most constant symptom is the progressive anemia, which is generally accompanied by gastric disturbance.

Not every case with heavy infection presents severe symptoms, and the reasons for this are thought to be: Lack of susceptibility to the toxin or partial immunity which is marked in the negro. The age at which the disease is contracted and variability in toxic properties of secretions of different parasites. Good nutritious food assists in resisting the infection.

Remarkably severe symptoms are reported by Brown (17) in a case that nearly died from anemia yet but seven parasites were recovered after administration of the anthelmintic.

The manifestations of the disease are divided into three classes according to the severity of the symptoms. These are slight, moderate and severe, and, in general, these degrees are characterized by greater severity manifested in the cases of that particular degree as well as additional symptoms in the more severe cases. Ankylostomiasis with no other symptom than the presence of ova in the stool is possible.

The symptoms manifest themselves in the appearance of the skin, retardation of general development, muscular system, circulatory system and blood changes, nervous system, respiratory system, alteration of digestive function, changed appearance of mucous membrane, interference with productive functions and development, vision and disturbance of temperature.

No attempt will be made to present the symptoms of this disease as they appear in the different stages but emphasis is given the fact that generally the severity of any of the symptoms presented in a particular case is an index of the extent of the infection.

SKIN.

At the time of infection a rash appears at the site of contact with infected material which was found by Smith (18) in experimental cases to pass through the following stages: In a very

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few minutes after contact with infected material, the patient experiences a sharp stinging sensation. This subsides in a few hours to be followed by an almost intolerable itching which lasts for a number of days. The cutaneous changes pass through the stages of redness, vesiculation, formation of blebs, which later rupture and are followed by incrustation. These stages require 8 to 9 days for their course. Following this, ova of the parasite may be found in the stool upon microscopical examination, after expiration of 7 to 10 weeks. The effects of the infection, later, shows itself in changes of color of the skin such as sallowness, pallor, lemon color or dead white and a facial expression characteristic of age far beyond that shown by physical development. The ears are devoid of color and nail beds and conjuctivæ are colorless.

RETARDATION OF GENERAL DEVELOPMENT.

This condition is so marked in cases of severe infection that have been acquired early in life that the patient of 20 or 25 does not appear older than 12 or 14 because of retarded development, lack of body hair, etc.

MUSCULAR SYSTEM.

The muscles become soft and flabby with extreme muscular weakness.

THE CIRCULATORY SYSTEM.

The influence upon the circulatory system is marked and blood changes are characteristic. Cardiac dilatation is frequent with frequent weak pulse and murmurs at the base of the heart and in the great vessels. A progressive anemia is a constant symptom. Palpitation is frequent.

BLOOD CHANGES.

The hemoglobin is always reduced. This reduction may fall as low as 8% with ultimate recovery (19). Of 600 examinations in Porto Rico none gave a reaction of over 40 to 45% (20). Yet mild cases are frequently encountered in which the hemoglobin is not below 90%. The decrease of hemoglobin always exceeds the numerical decrease of red cells.

Eosinophilia is generally present but its presence is not an indication of the severity of infection, for many cases of heavy infection may show no eosinophilia.

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NERVOUS SYSTEM.

The changes in the nervous system are dizziness, tinnitus, headache, parasthesia, especially of lower extremities, absent knee jerks and Signorilli (21) reports cases in young patients who suffered from meningeal neuralgiform and convulsive epileptiform syndrome. The mental torpor is characteristically shown in slow speech. Pain in the epigastrium, increased by pressure, and which may be relieved by food is a very frequent early nervous symptom.

RESPIRATORY SYSTEM.

Dyspnoea is a constant symptom following exertion.

ALTERATION OF DIGESTIVE SYSTEM.

May be anorexia, but generally bulimia is present and in many cases there is pica or geophygia, the patient craving earth, dust, rags and hair, etc. (22). There may be vomiting. The bowels may be loose in severe cases with fatal diarrhea or there may be constipation. In persons suffering from infection with Necator Americanus the presence of occult blood in the stools is not as frequent as formerly supposed.

INTERFERENCE WITH REPRODUCTIVE FUNCTIONS AND DEVELOPMENT.

The male may become impotent, and the female suffers from amenorrhea. Children born of parents suffering from this disease may be rachitic. Puberty is delayed. Menstrual functions may not appear until the age of 18 or 20 or not at all.

VISION.

Retinal hemorrhages frequently occur and night blindness is common.

TEMPERATURE.

The temperature is irregular. It may reach 103 F. and may be intermittent, or may be constantly subnormal.

GENERAL.

There is, generally, dropsy or serious effusions into the subcutaneous tissues and serous cavities, giving a plump appearance.

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PATHOLOGY.

The pathology of Ankylostomiasis, as has been shown, comprises marked changes in the blood elements and blood making organs.

The blood findings have been referred to previously, but, in detail, there is, generally, eosinophilia above 5% and the eosinophilia is considered an index of reaction to the toxin.

There may be a few Erythroblasts and Megaloblasts also Poikilocytosis and Polychromatophilia.

The following are blood counts reported by Leonard (24):

Eosinophiles,	18%	Small Lymphocytes,	17%
Large Lymphocytes,	8%	Polymorphoneuclear Leucocytes,	55%
Hemoglobinum,	8 to 40%	Other cells,	2%

Because of the fact that many persons infected with this parasite do not know it until the ova are found by microscopical examination, many observers disregard these infections; but besides being a menace to others, there are many severe cases in which only a few worms are found. Sandwich (25) reported 26 fatal cases of which 863 was the maximum number of worms found at the autopsy. In 6 of 18 of these cases in which no treatment had been given, there were less than ten worms per case. Still more astonishing, two cases only revealed one worm each.

Muscular tissue is said to be brownish-gray, friable and may be atrophied. The protoplasm reduced in amount and fibers are fragmented on microscopical examination. Edema and serous effusion have been previously referred to.

The worms are found to inhabit the jejumum principally but may be found in the stomach, duodenum and ilium. The organs in which found, show catarrhal inflammation with much mucous, which may or may not be bloody. The latter condition seems to be more characteristic of Ankylostoma infection than the infection met with in this country.

The mucosa is the only tissue involved and it may be atrophied with erosion at site of attachment of worm; this is difficult of perception, however. Petechial hemorrhages mark the site of attachment of Ankylostoma and they may penetrate the mucosa to some depth (but not with Necator).

The food of Necator seems to be epithelial cells, almost entirely as Ashford has counted thousands of specimens without finding

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any containing blood, and microscopical sections of this parasite attached to the mucosa show the buccal capsule filled with epithelium and he, furthermore, has seldom found blood in the stool.

THE KIDNEYS.

There is, generally, chronic parenchymatous nephritis and the kidneys are pale and slightly enlarged while there may be an increase of connective tissue. The changes detected on microscopical examination are said to be confined to the convoluted tubules, principally, and they consist in fatty degeneration and desquamation of epithelium, while bloody and epithelial casts may be found in them. There are exudates into the interstitial tissue and Bowman's capsule.

The urine may contain albumin with hyaline and granular casts although no anthelmintic has been given which may have acted as an irritant to the kidneys.

THE SPLEEN.

The splenic changes are characterized by Ashford as definite and characteristic. The spleen is smaller than normal, soft, and the capsule is wrinkled. The lymphoid elements are decreased and the cells of this tissue are smaller than usual. The Malphigian corpuscles are small and contain fewer cells. There is a relative increase of connective tissue.

THE LIVER.

This organ shows fatty degeneration. There may be found grains of yellow pigment in the parenchyma cells. These grains of pigment give the reaction of hematoidin and are thought to be evidence of intervascular blood destruction, due to the toxin secreted by the parasite.

THE LUNGS.

These organs may be pale and edematous. There may be passive congestion due to incompetency of mitral valves. There may be effusion into the pleural cavity.

THE HEART.

There may be cardiac hypertrophy. Functional incompetency. The pericardial fat generally increased and there may be serous effusions into pericardium. Microscopical changes are brown atrophy or fatty degeneration.

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THE BRAIN.

Anemia and clear yellow fluid in the ventricles.

THE MARROW.

Marrow of long bones may show changes resembling those of pernicious anemia.

HEMO LYMPH GLANDS.

Increased in size in region of abdominal aorta.

THE CUTANEOUS ERUPTIONS.

While the primary eruption or ground itch may heal in a few days, as previously stated, if pyogenic organisms are introduced, prolonged suppuration may follow, or deep ulcers may appear.

DIFFERENTIAL DIAGNOSIS.

Pernicious Anemia: Ankylostomiasis presents a condition resembling pernicious anemia in certain characteristics but microscopical examination of the stool reveals the ova of the parasite in the former. The erythrocytes are seldom reduced as markedly in Ankylostomiasis. In light cases observed in the tropics the red count was always around 5,000,000 cells. The anemia is progressive with no remission. The conjunctivæ do not show the yellow fatty bodies seen in pernicious anemia. The facial expression in Ankylostomiasis is peculiar to the disease.

Suspected aneurism or valvular disease clears up upon removal of hookworm. Malaria and amebic dysentery are determined by blood and stool examinations in which the organism causing such diseases is found.

Chronic Diseases: Condition clears up on removal of uncinaria.

*Tuberculosis*s Temperature not characteristic. No emaciation as in tuberculosis. Improvement on eradication of hookworm.

Carcinoma: Tumors never present and condition improves with appropriate treatment.

Brights Disease: Albuminuria and casts present in Ankylostomiasis, but, unless the kidneys have been permanently injured, the symptoms are relieved with the removal of the uncinaria.

TREATMENT.

The treatment of uncinariasis is very simple and the results are rapid and satisfactory.

Bozollo, in 1880, introduced thymool in the treatment of the

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disease and this is now considered the most satisfactory drug to use. Beta-naphthol is sometimes used but its effects on the kidneys are more serious, there being a marked amount of albumen in the urine when used in sufficient quantity to expel the worms, and it does not expel the worms as thoroughly as thymol.

Thymol may produce toxic symptoms if oil, alcohol, ether, turpentine, etc., are taken with it or while the patient is undergoing treatment and these drugs should be avoided at the time of treatment.

Treatment should begin with the patient not having eaten solid food for 12 to 24 hours. A full dose of calomel is administered in the evening and a saline purge is given on the following morning. After free bowel movement, thymol is given in capsules, the dose varying from 7 to 60 grains (.5 to 4 gms.) according to the age or apparent age of the patient; the quantity being more carefully determined up to 15 years of age than from that period on.

The quantity to be given is divided into two doses and administered an hour apart. The patient is required to remain quiet with no food during the day. A laxative may be administered late in the day, after this has produced bowel movement, food may be allowed.

Iron and tonics are not necessary in building up the patient.

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Reprints and Translations.

LESSONS OF THE RUSSO-JAPANESE WAR. EVACUATION OF THE WOUNDED BY FEW SANITARY SOLDIERS ASSISTED BY LARGE NUMBERS OF CHINESE COOLIES.*

DURING the Russo-Japanese War, the Japanese knew thoroughly well how to call upon the native Manchurian population to assist them.

* * * * * *

Mr. Nagao Ariga, Professor of International Law at the War College, Tokio, says on the subject:

"The total number of Chinese coolies employed in the lines of communication by the Japanese Medical Department was 135,302. Their only problem then was to use these Chinese coolies to the best advantage.

"If these knew they were not being watched, they would leave the sick at the side of a road, take to flight, and do what they pleased, making it necessary to spend hours to put the column in proper marching order. As nothing was more foreign to all their ideas than discipline, some of them would increase the pace and others slow up, with the result that the column would assume an appearance that was irregular and out of proportion; a source of great difficulty for those in charge. As a rule one of our litter bearers took the lead, another was at the center, and a third at the rear of the column, exercising a constant supervision and directing all movements of the coolies.

"In some parts of the country the use of mules was found to be very advantageous. Their gait was easy, sure and uniform, and consequently the sick were very comfortable, but as these animals would only follow the lead of their owners who fed them, it was necessary to hire them for leaders.

"An owner with two mules was paid as much as four coolies; 482 of these animals were used on the lines of sanitary trans-

*From La France Militaire for May 30th, 1909. Translated by Major Charles Willcox, Medical Corps, and furnished through the courtesy of the Chief, Second Section, General Staff.

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port. Use was also made of carts and wagons as well as of Japanese rickshaws hauled by Chinese coolies, especially where these methods of transportation were available. Here also the Japanese litter bearers acted as overseers. Naturally when a regular route for light locomotives was constructed on the line of communications between Mukden and Antung, Chinese coolies were dispensed with and the sick were transported over this route under the care of Japanese litter bearers.

"Still later when the Trans-Manchurian Grand Trunk Railway and its branches could be used for evacuations, the sanitary transport columns received orders to proceed to Liao-Yang and subsequently to Tie-Ling, and, divided into numerous escort detachments, worked in conjunction with some of our accompanying detachments in transporting sick and wounded from the north to the Port of Dalny.

"To sum up, the transport columns transferred 89,819 patients by means of litters, wagons or mules. 2,081 were transferred by boat and 79,427 by rickshaws, light engines or ordinary railway cars, making a total of more than 170,000 patients carried in these ways."

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THE CONGENERS OF PHAGEDENA AND THEIR TREATMENT WITH TURPENTINE.*

By George Ross, M. D., Richmond, Va, Consulting Surgeon, Southern Railway; Ex-President, International Association Railway Surgeons; Ex-President, Association Surgeons Southern Railway; District Surgeon, C. & O. Railway; Emeritus Professor Obstetrics, University College of Medicine, etc.

DURING the spring of 1862 I was a medical fledgling, fresh from the halls of the University of Virginia, and proud of the M. D. degree she had so recently conferred on me. I was on duty at the Banner Hospital in Richmond, Va. (so named by the Surgeon-General of the Confederate States because of its conspicuous cleanliness). The hospital was filled with sick and wounded soldiers from the battlefields of the memorable seven days' fight around Richmond. The dreaded hospital gangrene secured a foothold in the hospital, and I found myself face to face with it in the person of a young medical student. He had received an abrasion on the front surface of his thigh inflicted by a spent ball. The wound progressed satisfactorily for a time under the universally employed cold water dressings of those days when, suddenly, granulation ceased and the characteristic slough of gangrene manifested itself; a dirty, greenish, fetid and jelly-shaking mass of dying tissue, creeping saurian-like beneath the contiguous skin. Of course, I was demoralized and sought the counsel of the surgeon in charge, the late Dr. William Alexander Thom, of Northampton county, Va., than whom there were few abler surgeons, and no man worthier to be known as a courtier among gentlemen-physicians. Efforts to expedite the casting off of the decaying mass were advised, and such deodorants as were then available were employed. Alternating charcoal and crushed carrot poultices were locally applied, and dilute solutions of Labarraque's disinfectant rigorously resorted to. Food and whiskey, such as we could get, with bark and ferruginous tonics were the armamentaria of constitutional upbuilding, while the normal conditions of the bodily functions were carefully guarded. Bad

*Abstract from a paper read before the International Association of Railway Surgeons, held at Indianapolis, June 17, 1903, and published in Richmond Journal of Practice, July, 1903.

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to worse was the record of succeeding days, and the open grave seemed yawning for an occupant. I was in despair and quick to adopt a suggestion. Walking from the ward and bedside of my patient toward the officer's hospital, nearly a mile away, I chanced to meet Dr. James Read, then surgeon in charge of that hospital, formerly from Savannah, Ga., and for many years after the war a prominent figure in the medical circle of that city. Telling him of my anxiety and its cause, he listened with that courteous and patient attention which should ever mark the elder brother hearing the recital of a disturbing case by a junior seeking help, and sent me away cheered by the assurance that, when his advice had been acted on, the end would be well. His instructions were to mop the sloughing mass to saturation with pure spirits of turpentine, cover with a dressing and give the patient a teaspoonful of the drug every two hours, and, added that by the end of forty-eight hours the slough would have fallen out, leaving a granulating surface red as a beef steak in its stead. I obeyed instructions to the letter and his predictions were fulfilled, my heart made happy, and my patient made to enter on the road to an uneventful recovery.

Six months later I was transferred to Chimborazo Hospital and assigned to the first division, Dr. P. F. Brown, of Accomac county, Senior Surgeon. At the morning assembly of the entire staff surgeons were required to report all cases demanding the attention of the consulting board. One of the assistants, Dr. Minge, asked aid in a case of hospital gangrene, involving almost the whole of the gluteal region of one side. When older heads had expressed their views, I modestly ventured to report the case just read to you. The treatment was new to all my hearers, and he asked me to try my hand on his case. I gladly did so, and had much satisfaction in converting the despair of a sufferer into hope, and hope into assured health.

I have recently had under my care a series of sloughing ulcers on the calf of a man's leg—ulcers that I might have suspected of being the site of suppurating gummata, had there been occasion to justify a suspicion of their existence. But no history, confessed or discovered by critical investigation, warranted the assigning of such a cause.

The man's health was otherwise perfect and had been so throughout his entire life. He had not been sick in many years, and was still on his feet and daily behind his counter when he came under my care. He first had what his wife thought was a

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boil, an ordinary phlegmon, and so she poulticed it, but it did not get well. On the contrary, there came another and a bigger one, and she thought that was due to his falling and scraping his leg against a log of wood. Stinking, black dug-outs they seemed to be when I saw them, with œdematous tissues all around, some of the sloughs communicating by dark subcutaneous, slough-lined passages. Four weeks of persistent effort for their cure found me a failure, bolstered, as I had continuously been, by the full antiseptic paraphernalia of the modern surgeon, from curette to sterile gauze dressing.

My patient grew steadily worse, and then it was that the "steps already trod" were retraced, and I found again the friend that had so satisfactorily served me in the days of my youth. Two days of turpentine treatment did the work as of old, and the hen that laid my golden egg was dead—Othello's occupation was gone. A single *contretemps* is worthy of note in this case: Hematuria developed on the second day, but disappeared promptly with the withdrawal of the drug. The question of *rationale* of treatment naturally suggests itself to your minds, and I answer it: Pure spirits of turpentine, locally applied to a fresh cut or foul sore, is nature's perfected destroyer of germ-life, the ideal non-corrosive, innocuous disinfectant, and, when administered internally, save and except only adrenalin chloride, the product of the supra-renal capsules, is the most efficient capillary astringent known.

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THE SANITARY SERVICE OF THE GERMAN EXPEDITION AGAINST THE KOPPER-HOTTENTOTS IN MARCH, 1908.

By G. M. Blech, M. D.

DR. OHLEMAN contributes in the Deutsche Mil. Ztschr. (July 5, 1910) a long report on the sanitary service of the expedition von Erckert against the rebellious natives of Southwest Africa. This last of the important campaigns is one sui generis and in the opinion of the abstractor offers much of great interest to our own medical corps, because since our acquisition of tropical territory, where we, too, have to contend with small uprisings, the equipment of the sanitary formations as well as the work to be performed by our medical officers and subordinates may, under circumstances differing from those usually encountered in well organized campaigns in territory at least partially inhabited, differ considerably from that prescribed in the field service regulations.

Dr. Ohleman tells us that this is the first time in the history of his army that a large detachment of troops (about 400) undertook to invade for three weeks a comparatively large territory, devoid of water and habitation. As transportation animals only could be utilized, not even wagons could be made use of.

After reviewing the nature of the soil, the variable temperature, which showed sharp changes, not only through seasons but in each 24 hours, the author tells us that 9 months had been spent in preparation, special instruction being given the members in the use of camels as mounts as well as strictly strategic details.

Experiments of interest related to tests of how much water could be gained for the preservation of life of active troops from a melon growing in Kalahari, the provision of water for the expedition and the preparations for the transportation of sick and wounded.

During the period of preparation the men had been instructed in the precautions to be taken while killing poisonous snakes, in the first-aid when bitten, etc. Scurvy prevailed. No positive etiology was found, but it is believed that the preserved, canned food predisposed to this disease. Much difficulty was experienced

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by the officers in enforcing a rule to give fresh meat and to cook for the entire command. Fearing reduction in quantity each man seemed anxious to cook for himself. In von Erckert's command proper dietary regulations prevented an outbreak of scurvy; when it did occur the disease was quickly cured by small doses of alcohol.

At the places of preparation water was obtained from cisterns, and as it contained salines there appeared a disposition to intestinal trouble, which ceased when the men became accustomed to the water.

The warm season appeared in the middle of October and the unacclimatized troops suffered from acute, high fever and intestinal catarrh which ceased in a few days. Malaria though very much favored by locality, temperature and bad water did not occur, and this in spite of the fact that no prophylactic doses of quinine had been administered. Typhus appeared in January at the same time at the stations Kalfontein, Gochas, Aubes and Kowes. The appearance at the same time at different places spoke for a general source of infection. This infection could not have come from without, except through the freight trains which brought some Hereros as drivers from the north. The communication existing between the negroes who had been used as drivers by the troops and the new ones imported favored infection. Ohleman took every possible precaution by isolating the camps of the negroes and by doing all he could to treat them. He remarks that the underfed Hereros were worse off than the Hottentots, so that all of them who contracted scurvy died, in spite of early and rational treatment.

These negroes lived in the most primitive fashion. They had to be trained even to use the latrines, to prevent the flies carrying infection from the fecal excrements.

The author tells us that he encountered peculiar difficulties with the enforcement of a rule to boil the water. The reason was that the already bad tasting water became worse so when boiled.

Of some interest is the control of the officers over venereal diseases. To obviate ill-feeling old women of the tribe were taught to assist in the examination of the sexual organs of the women and girls; of course this examination was made by the medical officers. Infected females were isolated and treated. Much good was accomplished thereby.

The lengthy preparations had a special hygienic interest. Troops fresh from Germany were enabled to become acclimatized,

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and by their proper feeding and military training were placed in so good a physical condition, that insufficiency of the heart was not observed.

The greatest problem that confronted the corps was—water. The melon fruit (chama) as a substitute, though fairly satisfactory to the natives, proved entirely inadequate for the European. Combined with water it enabled the reduction of the latter. Large quantities would have been needed, however, which would have hampered transportation. Therefore an order was issued restricting the quantity of water to 1½ litters per man, irrespective of rank or color.

The expedition began in the first days of March, 1908. The heat was intense and not much less even during the night. The greatest amount of care had to be bestowed on the water, which was distributed in the canteens and carried in improvised tin containers, carried on the camels. Labor was lessened as much as possible to lessen sweating. Boiling of the water was impossible for tactical and economic reasons. Naturally after a while the water decomposed, nevertheless the germs did not seem to affect the drinkers. Occasional vomiting occurred. The command carried canned meats, egg zwieback, fat, butter, sugar, tea, coffee and salt. In the selection of the food the main idea was to prevent boiling, because of lack of water.

von Erckert's battle orders contained definite instructions in regard to the movements of the diverse units, according to time and compass, the darkness and thickness of the underbrush necessitating such measures. At dawn, the circular order read: horses and mules are to be left behind and the troops to advance from all sides towards the middle of the surrounded circle. It may be assumed that the strategic advance took place according to the order, but nevertheless the enemy was able to break through the line, the number of men being too small to properly cover the large space.

There was sufficient sanitary personnel. Each company had one senior and one assistant surgeon, a non-commissioned officer and four litter-bearers. von Erckert did not issue any order regarding the disposition of the sanitary personnel.

Considering the terrain, which could not be seen owing to the underbrush and the distance between the diverse units, and, owing to the possibility of the enemy moving between or behind the separated units, the position of the sanitary personnel suggested itself: non-commissioned officers and litter bearers on the firing

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line, litter bearers without litters, as in battles of so close a character as is fought in Africa the stretchers cannot be taken along. It would not have been possible to follow the firing line at a sufficient distance to remove the sanitary personnel from the zone of fire. It is generally very difficult, depending on the presence of cover, to reach an attacked line from behind; and if one be fortunate in getting there, there is usually no cover for the wounded, its very absence being the cause that the soldier was hit. If it had been decided to leave the sanitary personnel with the animals, the wounded would have had to wait until the next noon for the aid of their comrades, as was subsequently demonstrated by the battle.

The care of the wounded was accordingly arranged in such a manner, that surgeon and sanitary non-commissioned officer were notified of the presence of wounded in the battle line by word of mouth, and the surgeon or sergeant approached by alternate halting and rushing forward. After the application of a dressing, utilizing whenever possible the first-aid packet, (each man having two on his person) the wounded remained at the place, with one man as guard, behind the advancing line.

At about noon, after the termination of the battle, the field was "policed" by the companies in a broad chain, and the 19 wounded protected.

Medical service from now on aimed at the preparation of the wounded for prolonged transport. Service was rendered in the open air beneath the brush and in a dressing tent, pitched to protect wounded from the wind. The work done is qualitatively comparable with that done in a regimental dressing station (Hauptverbandplatz).

The situation was graver on account of lack of water. Water, to be sure, had been taken along especially for this purpose. In the interest of the injured, who suffered from extreme thirst, and partial exsanguination, one had to be terribly economical with it. One scarcely dared use the least bit to boil the instruments and to sterilize the hands which had remained unwashed for ten days or to wash the neighborhood of the wound or to irrigate infected wounds. While ordinarily the best rule is to apply the first dressing dry, in our case this was not sufficient. One must realize that the filed-off projectile which injured a skin that had not been washed for almost two weeks, could not remain uncleaned, on the eve of prolonged transport. For such cases possibly v. Oettingens' mastix solution could have rendered excellent service.

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Plaster-of-paris casts, which render useful service as means to enable transportation of patients with gunshot fractures, had to be dispensed with, to economize with the water.

More than half of our wounded belonged to the "seriously wounded" class. Two wounded died on the first day of transportation.*

In the rest the course of the injury was one undisturbed by infection and other complications and this in spite of the unfavorable conditions existing, and changes of dressings under like conditions. Ohleman thinks that this excellent result is due to the reliability of the first-aid packet furnished by army depots and to the paucity of bacteria in that country.

The return march of the expedition with its wounded began on the evening of March 16. The distance was estimated at 250 kilometers. The difficulties that would be encountered in the transportation of wounded on camels to such a great distance were foreseen and met with by special preparations.

Going to the battle a sanitary train for the transportation of food for patients, sanitary material, wounded and sick, was attached to the regular commissary train, and was commanded by a sergeant, under the supervision of a line officer—on the return trip this train was commanded by a medical officer.

At Geinab a tent-hospital was pitched for the temporary reception of wounded.

The train consisted of 27 riding and pack camels, to carry the material and the litters and 6 riders to protect and supervise the negro drivers. Half of the latter were mounted. The equipment of litters was enough to carry 10 prone wounded. The 5 companies had in addition a total of 10 improvised reserve stretchers for the patients who could remain in the sitting posture.

The transportation of wounded (prone) over long distances by pack animals is a problem not easy of solution. The lighter animals could not carry more than one patient, and here the problem is to construct the apparatus in such a way that the point of gravity must fall over the median line of the animal. The patient, therefore, can be carried only on the back of the animal. The patient is thus carried pretty high and his safety depends on the firmness of the belly-fastener.

An attempt had also been made to place a prolonged sort of a

*Dr. Ohleman states that he is "unable" to give the causes of the deaths and for special reasons cannot give the details of the character, course, etc., of the wounds. G. M. B.

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stretcher between two animals. It required eight weeks of training of the animals to accustom them to this new mode of hitching.

The transport moved up to 60 km. from Arrahoab, where ambulances awaited it. At times much difficulty was experienced, the camels lying down with a jerk, in spite of free administration of the whip. This hampered the entire column, (the wounded being placed in its center), which could at best cover but 3 to 4 kilometers per hour. The wounded reached Arrahoab, March 22, two days before the expedition. Their transportation over a distance of roundly 250 km. had lasted six days, 5 of which were spent on pack animals.

On the battlefield 15 dead were buried, among them 2 officers, one the commander himself.

The troops were disbanded soon after reaching their first destination in good physical condition.

Taking the main purpose of medical service as a criterion, Ohleman thinks that the sanitary personnel acquitted itself satisfactorily, in spite of the difficulties, which would never be experienced in civilized warfare.

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Contributed.

The Protection of Water Supply.—The writer had an experience which he feels might be of interest to some members of the National Guard.

While camping with a number of boys, the source of the water supply, a spring, was contaminated. Owing to the fact that the boys could not be kept on guard at the spring constantly to protect it, I placed in the water a few grains of methylene blue which colored the water deeply. I found that three grains of methylene blue was sufficient to maintain this color for 24 hours. The average militiaman considers water wholesome if it is clear, and colorless, and I found this method most effectual in preventing the boys from drinking it. F. K. TRAVERS WARRICK.

Lord Kitchener and the Medical Branch.—It is rare indeed that that great silent soldier Lord Kitchener allows himself to be drawn into a speech, but at the Middlesex Hospital last week he was enticed into one of those weighty pronouncements which prove his justification to be known as a man of great versatility in character. The occasion was the distribution of prizes to the students of the Medical School of Middlesex Hospital, and his speech was characteristic of the man—short, simple, and to the point. His remarks were addressed largely to those students who were undergoing a course of military training in order to be able to take part efficiently in any defensive war that might be forced upon this country. "I belong to a service," he said, "which is perhaps more closely connected than any other with the medical profession. Not only is it the duty of soldiers to care for the health of their men in war time but also in peace, to work together with and second the efforts of their medical confreres in the treatment of sickness, the necessary precautions against epidemics, and in perhaps the most important work of all, the prevention of disease amongst the men serving in camp or barracks."

He reminded those present that they were about to follow in the footsteps of many great men who had, in the past, success-

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fully devoted themselves to the scientific treatment and prevention of disease, and he urged them in their career to play the game, and work with all their might so as to worthily fill an honored place in a profession which, thanks to recent developments and research, had enormously extended its beneficent work for the human race. In a few trenchant sentences he made it clear to them that before they could be of real utility with troops in the field, they must go through a thorough training in the organization and routine, both of the Army and of the Royal Army Medical Corps, in order to fit themselves for the special needs of the Army in war time. A study of our Army medical organization would, he pointed out, call for considerable sacrifices, both in time and energy, but in doing this they would have the satisfaction of knowing that they were fitting themselves to be of real service to the nation in time of need. Lord Kitchener's own experience of late has, of course, been chiefly restricted to India, but he was able to indicate that in that country enteric fever, that scourge of the Army, is now, at least, definitely yielding to improved sanitary measures, and to the system of inoculation, which has recently become almost universal. The same satisfactory results have not been obtained in regard to suppressing malaria in India as at Khartum, for the reason that native sanitation and water supply are not under our control.

In India there are nearly 300 millions of natives, the greater proportion of whom live in insanitary and overcrowded cities, whose cases urgently call for considerate treatment, but the almost overwhelming difficulty in dealing wtih them lies in evolving methods that will not conflict with the tradition of ages in the direction of caste and religion. For years past the Government of India have been doing all they can in the matter, but the process of improvement must necessarily be slow, and calls for a large supply of willing and capable workers, men of the class Lord Kitchener spoke to last week, and who, by way of final word of advice, he suggested should endeavor to obtain practical experience of the treatment of patients in the field, their collection in advanced hospitals, and of the system which must control the difficult work of evacuating sick and wounded to general hospitals and bases.

Soldier and organizer, Lord Kitchener is not unmindful of the fact that the comparatively few losses in the Japanese Army, during the Russo-Japanese War, were undoubtedly attributable to the extraordinary sanitary and preventive measures carried

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out by the officers of their military medical department, combined with the precautions adopted by the Japanese soldiers themselves, at the instance of their medical officers. It is this, we feel, he had before him when making his impressive address to the students, for the versatile side of his character includes a keen interest in military surgery and sanitation. It will be remembered, in this connection, that it was Lord Kitchener who, when Sirdar in Egypt, reorganized the medical department of the Egyptian Army, and put it on the practical working basis it occupies today. It was also Lord Kitchener who, when his hands were very full of all manner of things during the South African War, and notwithstanding the unceasing demands which were made upon his time and mind by the elusive tactics of his Boer foes, yet found the time, as well as the ways and means, to also reorganize the existing medical system of the British Army in South Africa. Indeed, his action in regard to the medical branch of the Service, during the war, can be full of none too pleasant memories for him, for at one time a campaign of abuse was directed against him by the well-meaning but misguided busybodies, who descended upon the Army in the field at a most critical stage in the progress of the campaign, and cried out fiercely against Lord Kitchener because the grim soldier flatly declined to grant them a roving commission over all the hospitals under his charge.

—*United Service Gazette.*

A Master-Surgeon of the 14th Century.—In a delightful reprint by the Early English Text Society, Mr. D'Arcy Power, of St. Bartholomew's, has written a very interesting note called "Forewords" on the history of John Arderne, a Master-Surgeon of the fourteenth century, whose treatise on fistula in ano is reprinted by the Early English Text Society.

John Arderne was born in 1307 and resided much on the continent and was surgeon to John of Gaunt, "time-honored Lancaster," and served in the wars against the "Moors" and is said to have been present at the battle of Crecy. He was one of the surgeons "of the long robe," so called to distinguish them from the barbers who were surgeons of the short robe. In England such consulting surgeons, as we would now call them, always had the prefix Magister or Master. In his treatise on fistula Magister Johannes de Arderne sets forth his ideal of the morals and etiquette of the highest class of surgeons—the Masters of Surgery—during the thirteenth and fourteenth centuries, and shows that

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it is at least as high as it is among the best men of today. Pity, charity, continence in all things, the patient first, but the fee not unimportant, because, then as now the laborer was worthy of his hire, were the distinguishing characteristics of the educated surgeon.

Mr. D'Arcy Power in his interesting "Forewords" goes on to quote from the words of other Masters of Surgery and especially from those of Master Henry de Mondeville, whose works have been edited in French by Prof. E. Nicaise. De Mondeville had also a high ethical standard, similar to that of Lanfrank which we quote above. We need not quote it but the following extracts on the eternal fee question are amusing and of considerable interest:

"The surgeon ought to consider three things when a patient comes to see him and arrange about the fee for an operation. First, his own position; secondly, the condition of the patient; thirdly, the state of the disease. As regards himself, the surgeon should think whether he is celebrated or at least better known than his colleagues, whether he is the only surgeon in the country, whether he is rich and not obliged to practice, whether he has enough cases to fill up his time, and whether he is on the point of undertaking most important cases. On the second point, viz., the condition of the patient. He either knows or he does not know him; if he knows he is aware whether he is rich or poor, whether, for example, he is the nephew of a bishop or of an abbé. But if he does not know him he ought to make careful inquiries, or rather he ought to get his assistants to make them, because sometimes, indeed often, it happens that the rich come to the leech dressed like paupers. * * * As to the third point, the surgeon should think of the disease, whether it is serious, if it is difficult to cure, etc. When the surgeon has considered all the points under these three headings he ought to charge the patient boldly a very large fee, though he may moderate it according to circumstances. To the rich man he should say "the fee a surgeon ought to receive is a hundred pounds for this operation," and if the patient is staggered by the sum he would continue, "but I did not say I was going to charge you this amount," and thus little by little he lowers his fee. But he should always have a minimum for each operation and never go below it. In such cases it is more graceful for him to say—I am ready to do this operation, as you and your friends wish, but I would rather do it for nothing to please you than for so small a fee." * * * I repeat the surgeon ought to

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charge the rich as much as possible, * * * provided he does all he can to cure the poor. You then, surgeons, if you operate conscientiously upon the rich for a sufficient fee and upon the poor for charity, you ought not to fear the ravages of fire, rain or wind, you need not take orders or go on pilgrimages because by your science you can save your souls alive, live without poverty and die in your houses. For this reason surgeons enjoy such immunities and are free from all personal servic and from all common burdens, such as repair of walls, moats and roads, from the night watch in towns and from all kinds of things. The surgeons are classed as Surgeon-Major and as Surgeons of the Palace or Examiners, who are generally called Archiatres by the common people."

There is much of wisdom and practical common sense in these words of an old early fourteenth century Master-Surgeon.

—*The Indian Medical Gazette.*

Scurvy in the Russian Army and Navy.—In the Deutsche Mil. Arzt. Ztschr., Dr. Blau states that in the Russo-Japanese War many cases of scurvy appeared. In Port Arthur the cases were especially severe.

As reasons for its occurrence the author gives lack of variety, and poor quality of food. Climatic conditions had lowered the resisting power of the men, frequent periods of religious fasting; substitution for the sick of weak and poorly nourished recruits; poor quarters and the lasting emotional depression resulting from a precarious stiuation.

Dr. Blau draws the following practical conclusions: 1st. For field prophylaxis, a proper variety of food and suitable medicines. 2nd. A suitable combination of animal and vegetable food, of good quality, should always be on hand. 3rd. All doubtful food should be rejected. 4th. Systematic examination by the dentist of the teeth and oral cavity. 5th. Prophylactic mouth washes of animal and plant preparations. 6th. Anemia and digestive disturbances should be treated early.

The question of nutrition still remains the most important factor in the prophylaxis of scurvy.

—F. J. CONZELMANN.

Disinfection of Quarters.—Drs. Kahane and Strunk, Deutsche Mil. Arzt. Ztschr., publish a modification of the Autan method, which they consider serves the purpose of disinfection in the field as well as in barracks.

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One part paraform, two and a half parts of potassium permanganate and three parts of water are required. The paraform and permanganate are placed in an iron vessel, thoroughly mixed by means of a wooden stick. Then the water is poured over this mixture. The reaction does not take place immediately. The liberation of formaldehyde is double and water steam one and one-half more than with the Autan method.

—F. J. CONZELMANN.

Regulations for British Army Recruits.—Army Orders for October contain the following amendments of recruiting regulations:

Household Cavalry.—Height, 5 ft. 11 in. to 6 ft. 1 in.; age, 18 to 25 years.

Dragoons of the Line, Lancers of the Line, and Hussars of the Line.—Under 20 years of age, 5 ft. 4 in. to 5 ft. 7 in.; 20 years of age and over, 5 ft. 6 in. to 5 ft. 8 in. The maximum weight of men for Cavalry of the Line will be as follows: Under 20 years of age, 10 st. 7 lb.; 20 years of age and upwards, 11 st.

Royal Artillery Gunners.—Royal Horse Artillery: 5 ft. 7 in. to 5 ft. 10 in., 18 to 25 years; Royal Field Artillery: 5 ft. 7 in. to 5 ft. 10 in., 18 to 25 years. Drivers, Royal Horse Artillery: 5 ft. 4 in. to 5 ft. 7 in.; 18 to 25 years, Royal Field Artillery: 5 ft. 3 in. to 5 ft. 7 in., 18 to 25 years. Artificers, smiths, wheelwrights, harness makers, tailors, and saddlers, 5 ft. 4 in. and upwards, 18 to 25 years.

Royal Engineers.—Sappers (except as specified below), 5 ft. 4 in. and upwards, 18 to 25 years; Engine-drivers, 5 ft. 6 in. and upwards, 18 to 30 years; Military mechanics, 5 ft. 7 in. and upwards, 25 to 35 years; Bricklayers, 5 ft. 5 in. and upwards, 18 to 25 years; Shoemakers and tailors, 5 ft. 5 in. and upwards, 18 to 25 years; Telegraph Reserve, 5 ft. 5 in. and upwards, 19 to 30 years; Drivers, 5 ft. 4 in. to 5 ft. 7 in., 18 to 25 years; Sappers for field troops, 5 ft. 5 in. to 5 ft. 7 in., 18 to 25 years.

Infantry, etc.—Foot Guards: 5 ft. 8 in. and upwards, 18 to 25 years; Infantry of the Line, 5 ft. 3 in. and upwards, 18 to 25 years; Army Service Corps: Drivers, horse transport, 5 ft. 3 in. to 5 ft. 5 in., 18 to 25 years; Supply, 5 ft. 3 in. and upwards, 18 to 25 years; Mechanical transport drivers and artificers, 5 ft. 3 in. and upwards, age 18 to 30 and 18 to 35 years, respectively; Royal Army Medical Corps: 5 ft. 3 in. and upwards, 18 to 25 years; Army Ordnance Corps: Ordinary recruits, 5 ft. 3 in. and

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upwards, 18 to 25 years; armament artificer section, 5 ft. 4 in. and upwards, 21 to 30 years; armorer section, 5 ft. 4 in. and upwards, 20 to 25 years.

United Service Gazette

French Recruiting Statistics for 1909.—The following are the French recruiting statistics for 1909. The number of youths on the recruiting lists in January, 1909, amounting to 315,452. By adding those put back from 1907 (36,102), the total recruiting resources amounted to 351,554 men, who were distributed as follows:

Unfit for service		41,320
Debarred from service (criminals, etc.)		81
Put back		33,987
Postponed		3,538
Fit for non-combatant branches		16,427
Naturalized and, on account of age, exempt		1,259
Serving as volunteers	in Navy	4,745
	in Army	19,596
Enrolled in combatant branches		230,601
Total		351,554

—The United Service Magazine.

Organization of Japanese Army.—The Japanese Army at present consists of 19 divisions (one of which is the Guards), 9 cavalry brigades, 3 independent field artillery brigades, 2 heavy artillery brigades, 9 mountain artillery groups, and 1 brigade of communication troops (railway, telegraph, balloon). Each division consists of 4 infantry regiments, 1 cavalry regiment of 3 squadrons, 1 field artillery regiment of 6 batteries, 1 engineer, and 1 transport battalion. The peace budgetary effective, by branches of the Service, is as follows: Infantry, 129,000 men; cavalry, 19,500; field artillery, 11,270; mountain artillery, 1,620; foot artillery, 5,000; engineers, 10,400; transport 9,210; communications troops, 2,900. Total, 185,900 men.

The budgetary effective, however, is not generally reached. In most corps they do not amount to more than one-half, or one-third of the number laid down. The war effective is 1,200,000 men. If one compares the present peace strength (185,900 men) with those before the China-Japanese War (40,000) and before

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the Russo-Japanese War (60,000), one will be struck with the rapidity of its increase. The war effective has been even more remarkably increased.

The United Service Magazine.

Military Service in Norway.—According to the new law which comes completely into force on the 1st of January, 1911, military service in the Norwegian Army will be regulated as follows:

The Army is a militia with permanent cadres, which consist of 1,700 officers, 2,700 non-commissioned officers, and 18,000 men. Only 7 infantry companies, 1 squadron, 1 battery, 1 company of engineers, and 1 garrison artillery company are at all times maintained as instructional troops for the cadres. At the period of recruit drills, or during the summer calling to the colors, the strength of the Army is brought up to 25,000 or 30,000 men. Militiamen must spend 12 years with the active troops and 8 in the landwehr; all men from 18 to 50 years of age not included in these two categories must form part of the landsturm. The recruit drills last for 62 days in the infantry, 120 days in the cavalry, and 114 days in the field and mountain artillery. In the 2nd and 3rd armies the militia must serve for two instructional periods of 24 days each, and to one period during their passage to the landwehr.

The United Service Magazine.

Instruction in First-Aid in the Russian Navy.—L. Ghishujakoff, Fleet Surgeon of the 2d torpedo division (Baltic Sea), describes in the September, 1910, issue of the Medical Supplement to the Morski Sbornik the great need existing in the teaching of the seamen and petty officers how to properly render first-aid to their comrades, in addition to such instruction in reading and writing as has been on the program for some time. Ghishujakoff sees much good from such knowledge, first, because but one physician is attached to the division of torpedo and gunboats and, therefore, often beyond immediate reach, and second, because the knowledge possessed by the men enables a better carrying out of the orders given by the medical officer. The author properly suggests that such knowledge is also useful to the men when they leave the service, in their family and commercial life.

Instruction is systematized into two categories. The program for the first deals with a study of the first-aid (individual, the

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Russians call it) packet, the application of the first-dressing, a consideration of the tourniquet and aid for burns. Instruction in the above is given to all.

The better educated petty officers and men who show especial fitness are taught in second category—the following: Application of dry aseptic dressings to wounds, arrest of hemorrhage, application of Esmarch bandage, bandaging, immobilization, artificial respiration, first-aid to the drowned, burnt and poisoned by gases, to those afflicted with syncope, frost-bite, acute alcoholism, etc.

The teaching has borne fruit in that several injured were promptly taken care of by their trained comrades, to the satisfaction of the medical officers. Examinations and tests are held from time to time. The officers recognizing the value of such training have asked the division surgeons to deliver lectures, which wish will be complied with during the coming winter.

—G. M. BLECH

Etiology of Pellagra.—Progress Report on the Investigation of Pellagra. L. W. Sambon, *The Journal of Tropical Medicine and Hygiene,* Oct. 1, 1910.

Protozoal Theory.—In 1905 Sambon suggested that pellagra is a parasitic disease and in this article reiterates this suggestion and further elaborates it by suggesting that the disease is not only of parasitic origin but is insect borne and conveyed by the simulium-sand fly. His theory is based on the following facts:

1. The disease is parasitic for the reasons that: a. The cutaneous and other symptoms usually recur periodically each summer for many years even though the patient remove from an endemic area and subsist on a corn free diet. b. Its peculiarities in distribution, seasonal incidence, symptoms, chronicty and pathology correspond to those of other protozoal diseases—trypanosomiasis, kala-azar, syphilis.

2. The disease is insect borne because: it is not directly contagious, infection through food or water does not explain its epidemiology, it is limited to rural districts being practically restricted to the field laborer.

3. The disease is conveyed by simulium because: the topographical distribution of the simulium and pellagra appear to be coincident, the adult stage of the simulium apparently presents a seasonal incidence similar to that of pellagra, the insect is found in rural districts only but seldom entering towns or houses, the only class of people constantly exposed to the bite

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of the simulium are field laborers, the disease is practically confined to the field laborer, other similarly small blood-sucking flies are strongly suspected of being conveyors of disease—phlebotomus papatassi, dilophus febrilis. J. F. SILER

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Reviews.

MEDICAL CHAOS AND CRIME. By Norman Barnesby, M. D. Octavo of 384 pages. Mitchell Kennerly, London and New York, MCMX. $2.00 net.

The author might better have styled his book "Medical Muckraking."

Every muckraker is, of course, impelled by the highest motives but is he always right? Certainly he always appears to think he is and this is no exception to the rule. We all know that abuses exist in the medical profession but that any good purpose is served by gathering together from here, there, and everywhere cases of malpractice and illuminating them in lurid language we may be permitted to doubt. On the other hand we still believe that the vast majority of physicians and surgeons are impelled by the highest motives and that the public is not victimized by the medical profession unless it allows itself to be so. As a matter of fact the public in any community can fully protect itself. In 999 cases out of a 1,000, and perhaps more, a patient will receive excellent treatment at the hands of any physician who has the respect of his fellows. If one selects a physician with less care than he would a plumber he has only himself to blame if he gets into difficulties. All medical schools do not yet give their graduates the preparation to which their future patients are justly entitled it is true but why select a practitioner from a school of doubtful reputation. There is no lack of well-taught medical men.

The writer depends on legislation to correct the abuses of which he speaks and would have established a national board of health with very large powers. Perhaps he might be taken more seriously in this particular if there were the slightest prospect of the legislation which he suggests.

APPLIED ANATOMY: The Construction of the Human Body Considered in Relation to its Functions, Diseases, and Injuries. By Gwilym G. Davis, Associate Professor of Applied Anatomy, University of Pennsylvania; M. D., Universities of Pennsylvania and Goettingen; Member of the Royal College of Surgeons; Fellow of the American Surgical Asso-

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ciation, etc. Octavo of 630 pages with 630 illustrations, mostly from original dissections and many in colors by Edwin F. Faber. J. B. Lippincott Company, Philadelphia and London.

This book well illustrates the improvements which have been effected in the teaching of anatomy of recent years. Not so long ago the poor student learned the bones and the muscles and then the arteries, and so on, and then promptly forgot most of what he had learned because he could neither make practical use of the facts nor see their application. Doubtless most of us could speak feelingly on this subject. In this book examination facts have been pretty well eliminated and the student is shown the part of the body under discussion and has its anatomy described in a practical way with consideration of its various affections.

The book is well written and illustrated and should be in the library of every surgeon.

DISEASES OF THE SKIN. New (6th) Edition, Revised. A Treatise on Diseases of the Skin. For the use of advanced Students and Practitioners. By Henry W. Stelwagen, M. D., Ph. D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Handsome octavo of 1,195 pages, with 289 text-illustrations, and 34 full-page colored and half-tone plates. Cloth, $6.00 net; Half Morocco, $7.50 net. W. B. Saunders Company, Philadelphia and London, 1910.

The popularity of this well-known work is shown by this being the sixth edition within a period of eight years. As was the case in former editions considerable attention has been given to diagnosis. And with a view to making this subject clear illustrations have been freely used. These illustrations are excellent. Much space is also allotted to treatment and to etiology. Pathology and pathological histology are considered more briefly but in a wholly adequate manner.

Much obsolete matter has been eliminated from the present edition which has permitted the introduction of new material without notably increasing the size of the volume. The article on pellagra has been entirely rewritten with the views of the American observers incorporated. Many of the latter, by the way, are members of this association.

A MANUAL OF NURSING. By Margaret Frances Donahoe, Formerly Superintendent of Nurses, and Principal of Training School, Philadelphia General Hospital. Octavo of 489 pages. Illustrated. New York and London: L. Appleton and Co., 1910.

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This is an exhaustive manual on the subject of nursing. All the duties which a nurse would be likely to be called upon to perform are described at length. Common words are used as much as possible and the subject is reduced to a form in which it should be assimilated by the beginner. The style indicates that the author writes from personal experience.

The book is a good one but would be improved by subdividing the chapters. Each chapter treats of necessity of a number of different subjects and these follow one after the other without separation, so that some confusion results in reading the book and much more would be occasioned in attempting to use it as a book of reference.

WOUNDS IN WAR—The Mechanism of their Production and their Treatment. By Colonel W. F. Stevenson, C. B., K. H. S. R. A. M. C. (Ret.); B. A., M. B., M. Ch. Dublin Univ.; Late Local Surgeon General and Professor of Military Surgery, Royal Army Medical College, London. Octavo of 559 pages, with 137 illustrations. Third Edition. Longmans, Green & Co., 39 Paternoster Row, London, New York, Bombay, and Calcutta, 1910.

Most of us well remember with pleasure the appearance of the first edition of this book in 1897. Valuable modern works on gunshot wounds had been published on the continent, but this was the first thoroughly modern book in English. The third edition has now appeared and merits the same careful study as did previous editions.

While the book has generally been brought up to date, in the opinion of the reviewer, much that is now obsolete might be admitted to advantage and more might be said in reference to the new bullet. The table on page 34 on breech-loading magazine rifles of small calibre was compiled in 1904 and is in consequence of very limited value at present. No reference can be found to the use of iodine in war surgery. The employment of this drug has probably been the greatest advance within the past five years.

DAWN OF THE FOURTH ERA IN SURGERY AND OTHER SHORT ARTICLES. By Robert T. Morris, M. D., Professor of Surgery, New York Post Graduate Medical School and Hospital. 12 mo. of 145 pages. Artictically bound. $1.25 net. W. B. Saunders Co., Philadelphia and London, 1910.

The articles which go to make up this small book originally appeared in the journals. They are as follows: The Hand of Iron in the Glove of Rubber; Gall Spider Cases; Back to an Old Idea, for it Introduces a New Principle in Surgery; The Advantages of Expeditious Surgical Work; My Changes of View in Appendicitis Work; McBurney's Point and Another Point in Appendix

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Diagnosis; Protective Appendicitis; Palpation of the Appendix; The Dawn of the Fourth or Physiologic Era in Surgery; The Idea of Gross Cleanliness in Surgery, and its Harmful Results; The Choice of Procedure in Cases of Loose Kidney; Management of the Adipose Layer in Suturing.

The author is well known not only as a successful surgeon but also as a writer who has the faculty of saying things so they will always be remembered. There is probably hardly a member of the association who cannot quote paragraphs from his first book on wound treatment. Many of the present essays are couched in somewhat the same compelling style.

The author presents the advantages of rapid operating in a convincing manner. The book should be read and enjoyed by all interested in the subject of surgery.

AMERICAN RED CROSS ABRIDGED TEXT-BOOK ON FIRST AID, General Edition. A Manual of Instruction. By Major Charles Lynch, Medical Corps, U. S. Army. Prepared for and Endorsed by the American Red Cross, 16vo, with 55 Illustrations. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Pa., 1910.

This small book is one of a series which is being published for the American Red Cross. This association has lately gone seriously into the subject of general instruction in first aid to the injured. It now has several books which are constantly being added to and various material in the way of charts, packets, chests, teaching outfits, etc. An instruction car is also operated on the railways and the association has charge of first-aid instruction on the seven mine rescue cars of the Mining Bureau. Major Charles Lynch, U. S. Army, is in charge of the First-Aid Department of the Red Cross and 1st Lieut. M. J. Shields, Medical Reserve Corps (inactive list) and Dr. M. Whitfield Glasgow are field instructors.

Consultation of late statistics will show what an enormous percentage of mortality is now due to accident. The Red Cross seems to have taken on a most important work; a work too which will show in war as well as in peace. That association therefore merits our assistance in this as well as in other respects. The small book under review corresponds very closely to the larger book of the same author. Some additions dictated by experience have been made and in this edition chapters of more special application to industrial conditions have been cut out. The present edition is specially endorsed for schools, "Boy Scouts," etc.

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Editorial.

THE month has been characterized by sensational discussions of peace and war. The contribution of a very large fund to the cause of peace by one of our foremost philanthropists almost coincided in point of time with a confidential report to Congress by the Secretary of War which is generally reputed to have commented on the unpreparedness of our country for war. International peace, desirable as it may be, is so remote a possibility at the present time that no country need take it into account in the adoption of policies to preserve the integrity of the state. On what such policies shall be so far as this country is concerned this journal has no suggestions to offer. Nor would this subject be discussed at all except for a total misunderstanding of cause and effect as manifested in an attack made on army methods by a well-known medical writer at a recent meeting of the American Civic Association in this city. This gentleman seized upon an instance in Florida in 1898 where an officer detailed two privates who were medical men to make a sanitary investigation. He stated that this was stopped by the War Department and that the official surgeon did not arrive until two days after the camp was broken up and seems to think that the numerous deaths which occurred were due to the fact that privates were not deemed fit to do this work for which they were well qualified, or in other words, to red tape methods. The rather intemperate language in which he characterized this performance struck a responsive chord in the audience which apparently remained in sympathy with the speaker notwithstanding a truer statement of the case by a better informed physician.

It has become such a popular amusement to cast stones at the medical department of the army that officers of that department have lost their sensitiveness to a great extent. Moreover, the increase in personnel which has been accorded the medical department since the Spanish-American War did not come directly as a result of the lessons of that war but much later and may be fairly ascribed mainly to continued criticism of the medical department which seemed to strike a popular chord much as did the words of this speaker. Vilification has therefore been useful in the past

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and perhaps will be equally so in the future. From time to time, however, it is, generally speaking, well to look straight in the cold grey eye of fact. And in view of general interest at the present time in army affairs this may be an occasion of that character.

No, the failure of the medical department in the Spanish-American War was not due to red tape methods, nor to the inability of an officer here and there to appoint irresponsible members of his command to make sanitary investigations. For the cause we must look much deeper than that. A very small army is an excellent thing for peace times. The smaller the better from one point of view as this will cut down expense to the minimum. Therefore in common with the majority of our countrymen let us laud unreservedly the advantages of a small army in peace. But let us stop a moment. Suppose we do have war. The expansion of any army for war is limited. A very small peace army has never been successfully expanded into a large war army. So desirable as a small army is in peace it is about the most futile thing that can be conceived in war. When the Spanish-American War came our army was far too small to be expanded to the size deemed necessary.

As previously stated this journal will not discuss the policy of our government in respect to the size of the army. If the good of the country seems to demand a very small army, and many people seem to think it does, well and good, but it should never be forgotten that if war does come we must then pay the price and our creditor will not be niggardly in his demands—be they the lives of our soldiers from defective sanitation, or from the bullets of the enemy. On the other hand, if we are not willing to take these chances there is no way to eliminate them except by adequate preparations for war in peace.

The details can be worked out by the department most nearly concerned and in view of the sanitary work on a great scale in Panama and Cuba and elsewhere slurs on the intelligence of the medical department are wholly unnecessary. Given the means and the necessary opportunity to prepare for war it will be able to minimize the deaths from preventable diseases when war comes to as great, or greater, an extent than can any other country. With deficient preparation it cannot hope to rival other countries which are better prepared. It may be set down as another fact that radical departure from existing methods with the transference of large powers to irresponsible individuals no matter what

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their ability cannot result in good in our own or in any other army.

The lives unnecessarily lost in the Spanish-American War cannot be too much deplored and doubly so if through the sacrifice conditions cannot be bettered in the future, but do not let us continue to charge them up to red tape but to unpreparedness to which they may properly be ascribed.

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News of the Services.

Articles by members appearing elsewhere have been noted during the month as follows: Pulmonary Hemorrhage in the Tuberculous at High Altitude (6,200 feet); Report of 56 Deaths; Frequency of Associated Heart Disease by P. A. Surgeon T. C. Smith, U. S. P. H. & M.-H. S.; Observations Upon the Noguchi Modification of the Wasserman Complement Fixation Test in the Diagnosis of Lues in the Military Service by Capt. C. F. Craig, Medical Corps, U. S. A.; Gangrene of the Lung with Trichimonas Intestinalis as the Only Apparent Etiologic Factor by 1st Lieut. G. C. Dolley, Medical Reserve Corps, U. S. A.; The Inter-relationship of Gall Stone Disease and Appendicitis by Capt. F. W. Foxworthy, N. G. Ind.; Dislocation of the Shoulder-Joint Complicated by Fracture by Major J. S. McEwan, N. G. Fla.; The Economic Value of Family Physician Refracting and A Conference of Ophthalmologists with Organization Officials on Family Physician Refracting by L. Connor; Water the Main Factor in the Prevention of Disease by Col. J. C. Minor, N. G. Ark.; Iodine by Maj. F. T. Woodbury, Medical Corps, U. S. A., and A Statistical Study of Uncinariasis Among White Men in the Philippines by Major W. P. Chamberlain, Medical Corps, U. S. A.

Upon the recommendation of the Surgeon General of the Navy, it is probable that important modifications in the physical test for officers will shortly be inaugurated. Instead of one test only, consisting of a fifty-mile walk, a ninety-mile horseback ride, or a one-hundred-mile ride on a bicycle, to be performed on three consecutive days, it is proposed that hereafter a walking test shall be taken quarterly. This will consist of twenty-five miles only, to be performed in two days. Officers will, however, be examined once a year as heretofore, such examination to take place before the first of the quarterly tests.

Upon the Bureau's being informed of the existence of typhoid fever at Annapolis in the persons of three midshipmen, several members of the nurse corps and a number of hospital corps men were sent to the hospital at Annapolis. Surgeon Charles St. J. Butler, bacteriologist of the Naval Medical School, was sent with antityphoid vaccine, in order to protect as many of the midshipmen body as would agree to take this prophylactic measure, and he was furthermore directed to confer with the senior medical officer to outline a campaign against the spread of the disease. Precautions were taken in the matter of food and drink, so that the only opportunity of contamination from this source was possible between the kitchen and the table. Disease conditions in the surrounding communities were looked into, water was examined and found to be negative; and, as the result of these observations, suspicion centered on an out-of-town supply of milk which it was necessary to make use of for a short period. A number of midshipmen ill with fever, con-

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cealed the disease for certain reasons and they became active carriers and were a menace to the rest of the midshipmen body. It is probable that some of the later cases can be traced to this source. At this time the fever seems to be at an end. December 12th a Board, consisting of Medical Inspector J. M. Edgar, Surgeons C. St. J. Butler and E. G. Parker, and P. A. Surgeon O. J. Mink, U. S. N., was convened to determine, if possible, the source of the outbreak and to recommend such measures as may be deemed necessary to prevent the disease in future. Up to this writing there have been twenty-nine cases of typhoid fever with no deaths. This is a very creditable showing, in view of the fact that a large proportion of the cases were of a serious character from the outset. From the start the question of typhoid carriers has been under consideration, also defective sewage disposal and the influence of the fly as a contributing source of trouble.

Two candidates for the Naval Medical Corps successfully passed the examination in December, Doctors Chester McI. George and Luther Sheldon. As the next session of the Naval Medical School will not begin until October, 1911, they will be assigned to duty at two of the larger naval hospitals in the meantime.

The new Navy personnel bill recently introduced in the House and Senate contains important modifications. Among others affecting the medical corps is the omission of the sections pertaining to the dental corps and the appointment of acting assistant surgeons. The dental bill has been taken up as a seperate measure, and, as the personnel bill provides for a medical reserve corps the services of acting assistant surgons would no longer be required.

The Surgeon General of the Navy, in his hearing before the House Naval committee early in December, outlined his views relative to the care of the wounded in war. He would provide a large base hospital of temporary construction available for either the Atlantic or Pacific Fleet, as required. A fleet of 16 battleships should be accompanied by at least one hospital ship and three hospital transports, one vessel for each division. On these auxiliaries there would be supplied a medical personnel to be specifically set aside for each of the various battleships, so that immediately after action the care of the wounded would devolve upon a body of men who had not been subjected to the stress of battle and who would be fully equipped and competent to quickly dispose of anticipated casualties, possibly some 4,000 in number. It is expected that the Surgeon General will explain the details of his plan in a forthcoming issue of "THE MILITARY SURGEON."

The Trustees of Jefferson College, Philadelphia, have invited Surgeon General Stokes to deliver the valedictory address to the graduating class next June. Upon this occasion the Surgeon General will be the receipient of an unusual distinction when the Trustees will confer upon him the honorary degree of LL.D.

Colonel Winslow Anderson, Surgeon General of California, who has been passing the past six months abroad, is returning to New York by

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the Majestic on November 23. Colonel Anderson has been devoting special attention to the medical departments of the armies of England, Denmark, Germany, Italy and France during his European trip.

For the first time in a number of years the Arkansas State Guard has three active colonels. This is due to the fact that Adjutant General Green last afternoon directed that a commission as colonel be issued to Maj. J. C. Minor of Hot Springs, head of the State Guard medical corps. With this promotion in rank goes a corresponding promotion in the medical corps, for Colonel Minor is made surgeon general of the State militia.

Heretofore, his position has been that of acting-surgeon general, with the rank of major. As he is the head of a distinct branch of the State Guard, it was deemed fitting by General Green that he be given the rank indicating a departmental head, that of colonel. The other two colonels in the active service are Colonel Henry Stroup of the Second Regiment, headquarters at Paris, and Colonel William Harrison of the First Regiment, Infantry, with headquarters at Osceola.

Colonel Minor, with his medical corps, will be in supreme command of the sanitary conditions in Little Rock during the Confederate Reunion, next May, under Medical Director J. H. Lemon, Little Rock, for the Civil Reunion.—*Daily Paper.*

Captain William R. Eastman, Medical Corps, who has been a patient in the Walter Reed General Hospital, where he was operated on for appendicitis, is convalescent, and is again at the home of his parents, East Falls Church, Virginia.

Captain Robert L. Richard, Medical Corps, is spending his four month's leave of absence in Berlin and Vienna, where he is making a special study of nervous and mental diseases.

Captain Edwin W. Rich, Medical Corps, has reported to the Surgeon at Fort Mason, California, for duty as Attending Surgeon in the City of San Francisco, California.

Lieut. Arthur N. Tasker, Medical Corps, has completed his tour of foreign service, and is now on duty at the Presidio of San Francisco, California.

Captain Allie W. Williams, Medical Corps, is on temporary duty as Attending Surgeon, New York City. He wil remain on this duty until Captain Eastman is able to report for duty.

Captain S. M. DeLoffre, Medical Corps, will sail for the Philippine Islands January 5, 1911. Captain DeLoffre has been assigned to duty in the Philippines at his own request.

Orders have been recently issued for the following officers to sail for the Philippine Islands:

January 5, 1911.—1st Lieut. Charles T. King, Medical Corps; 1st Lieut. Mark D. Weed, Medical Corps; 1st Lieut. Ernest E. Roberts, Medical Reserve Corps.

February 5, 1911.—1st Lieut. Thomas D. Woodson, Medical Corps; 1st Lieut. Floyd Kramer, Medical Corps; 1st Lieut. W. Cole Davis, Medical Corps; 1st Lieut. John R. Hereford, Medical Reserve Corps; 1st Lieut. John F. Leeper, Medical Reserve Corps.

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March 5, 1911.—1st Lieut. Wayne H. Crum, Medical Corps; 1st Lieut. Herbert I. Harris, Medical Reserve Corps; 1st Lieut. Francis M. Wells, Medical Reserve Corps.

By recent orders the following medical officers, now on duty in the Philippine Islands, who have completed their tour of service in those islands, have been relieved and directed to proceed to San Francisco, California, and report for further orders:

January 15, 1911.—Captain William H. Moncrief, Medical Corps; Captain Philip W. Huntington, Medical Corps; Captain William A. Powell, Medical Corps; 1st Lieut. George W. Daywalt, Medical Reserve Corps.

February 15, 1911.—Captain Horace D. Bloombergh, Medical Corps; Captain Harry S. Purnell, Medical Corps; 1st Lieut. Joseph A. Worthington, Medical Corps; 1st Lieut. Julius C. Le Hardy, Medical Reserve Corps; 1st Lieut. Henry F. Lincoln, Medical Reserve Corps.

March 15, 1911.—Colonel William B. Davis, Medical Corps.

April 15, 1911.—1st Lieut. Howard M. Snyder, Medical Corps; 1st Lieut. Edmund W. Bayley, Medical Reserve Corps; 1st Lieut. James C. Ballard, Medical Reserve Corps.

1st Lieut. John R. Barber, Medical Corps, has been detailed as a member of the board for the study of tropical diseases as they exist in the Philippine Islands, vice Captain Bloombergh, relieved.

1st Lieut. Hiram A. Phillips, Medical Corps, arrived from the Philippines on the last transport and has been assigned to duty at Fort Andrews, Massachusetts.

1st Lieut. Garfield L. McKinney, Medical Department, arrived from the Philippines on the last transport and was assigned to duty at the Army General Hospital, San Francisco, Cal.

Orders have been issued placing Colonel John M. Banister, Medical Corps, on the retired list (December 31st, 1910), on his own application, after more than thirty-one years' service.

Major E. R. Whitmore, Medical Corps, availed himself of a four months' leave October 6th; he is spending this leave in Europe.

1st Lieut. George F. Campbell, Medical Reserve Corps, whose station is Fort Wingate, New Mexico, is at the Army and Navy General Hospital, Hot Springs, Arkansas, for observation and treatment. Lieut. Campbell's shoulder was severely injured by falling with is horse, during the last summer.

Major John H. Stone, Medical Corps, is ordered to report to the President of the Retiring Board in the City of Washington, D. C.

Major Robert B. Grubbs, Medical Corps, has changed station from Fort McIntosh, Texas, to Fort Bliss, Texas.

Major Charles Willcox, Medical Corps, is on a two months' leave which he is spending with his family on a trip to Bermuda.

Lieut. Colonel Charles M. Gandy, Medical Corps, has assumed the duties of Chief Surgeon, Department of California; he is also Medical Superintendent of the Transport Service.

1st Lieut. Arthur N. Tasker, Medical Corps, is on leave of absence from his station, San Francisco, which he is spending in the city of Washington.

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Lieut. W. E. Brown, Medical Reserve Corps, who has been suffering from tuberculosis since 1907, has been placed on the inactive list.

Major James R. Church, Medical Corps, has reported for duty at Fort Williams, Maine, relieving Captain E. W. Miller, Medical Corps, who has availed himself of a short leave of absence, and on December 24th reported for duty at Fort Ontario, for duty.

Captain Kent Nelson, Medical Corps, is on an extended leave from his station, Whipple Barracks, Arizona.

Captain Blair D. Taylor, Medical Corps, has been granted a four months' leave of absence, to take effect January 1st, and will retire at the expiration of this leave, April 30, 1911, after more than thirty-five years' service.

By recent orders Colonel Daniel M. Appel, Medical Corps, is relieved from duty at the Supply Depot, St. Louis, and will assume the duties of Chief Surgeon, Department of the Gulf.

Major Charles Y. Brownlee, Medical Corps, has reported for duty at Fort Des Moines, Iowa.

By recent orders Lieut. Colonel H. S. T. Harris, Medical Corps, has assumed charge of the Medical Supply Depot, San Francisco, California, relieving Colonel D. M. Appel, Medical Corps.

Major Wallace De Witt, Medical Corps, reported for duty at Schofield Barracks, H. T., November 14th.

Major Henry A. Shaw, Medical Corps, sailed for the Philippine Islands on the December 5th transport.

1st Lieut. C. D. Cowles, Jr., Medical Reserve Corps, has reported for duty at West Point, New York.

Captain William R. Eastman, Medical Corps, has assumed the duties of Chief Surgeon in New York City.

By recent orders 1st Lieut. John H. Trinder, Medical Reserve Corps, has been called into active service and assigned to duty at Fort Jay, New York Harbor. Lieut. Trinder has passed the preliminary examination for appointment in the Medical Corps.

Major William E. Vose, Medical Corps, has reported for duty at Jackson Barracks, Louisiana, relieving Major Usher, Medical Corps, who goes to Fort Sam Houston, Texas.

By recent orders Lieutenant Roy C. Heflebower is transferred from Fort Hamilton, N. Y., to the Army General Hospital, Fort Bayard, New Mexico, for duty.

Vaccination against typhoid fever will be administered next Tuesday night to all the members of the Richmond Howitzers, according to the plans of the surgeon, Dr. F. K. Travers Warrick. In this respect the command is in line with the practice of modern nations in handling their troops.

It is regarded as probable that within a short time the other militia commands in Richmond will be treated in the same way, and that before long all the companies and batteries in the State will have been vaccinated. The treatment is entirely voluntary, although next year it will be made compulsory in the United States Army, according to expectations. It is not believed that any militiaman will object to the vaccination.

Within recent years experiments with the treatment have been going on in armies on a large scale. Portions of regiments would be vaccanated

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and other portions left unvaccinated, and exposures to diseases were made uniform. At first the treatment was crude, and although from the beginning the number of cases was reduced, there were still some cases. In the British Army some of those vaccinated suffered from typhoid, while there were no deaths among those who had taken the treatment, as against a large percentage of deaths among the others.

In more recent years the method has been perfected until it has reached the point where it is considered by Dr. Warrick as an absolute preventive. After undergoing the treatment the man may eat or drink anything, so far as typhoid is concerned, with perfect impunity. The value of this in militia camps will be readily understood, for not only are these great spreaders of disease, but the men who return home carry the germs.

In civil practice, it appears, the system has not yet been fully presented to most physicians. Dr. Warrick believes it to be a matter of a short time until all physicians will administer the virus.

At the joint encampment at Gettysburg last July there was an ambulance corps, which was marched up from Fort Myer. On the return trip all the men, 162 in number, drank of a spring which was afterwards found to be contaminated with typhoid. The men were segregated on their return to Fort Myer and watched. Of the 136 men who had been vaccinated there was not a single case of typhoid, while of the other twenty-four men there were six cases, or 25 per cent. Had the same percentage kept up among those vaccinated, who were equally exposed, the cases would have numbered thirty-four. There was none.

The treatment itself is simple. The physician merely administers an injection of virus in the arm, consisting of 5,000,000 dead germs. The person vaccinated experiences a slight rise in temperature, lasting for six or eight hours, which he would not notice unless he were looking for it. As a matter of fact, he has very mild typhoid fever for six hours. The point of vaccination swells slightly during this time and remains sore for two days. There is no scar. No ill effects whatever are felt.

The supply of germs all came from the spleen of a man who died from typhoid sixteen years ago. They are scientifically propagated and are continually tested for their strength. Before preparation for injection they are killed by heat.

—*Richmond Dispatch, November* 30.

The Adjutant General has been informed that the Typhoid Vaccine is furnished the State for the use of the National Guard the same as it is issued for use in the Regular Army. No charge being made against the State Funds for same. They further stated that a new batch is being prepared and that as soon as it is ready the amount of our requisition will be forwarded. We expect to receive it any day as blanks have been received at this office to report the name of those vaccinated at this time.

—*Field Hosp. Bulletin. N. G. Mo., Dec.* 1, 1910.

The following officers and enlisted men of the Field Hospital received the initial dose of Typhoid Vaccine December 6, 1910: Major Gebhart, Lieutenant Minton, Sergeants Hagar and Osborn and Privates Johnson

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and Whalen. The degree of severity of the general reaction was mild. All experienced general malaise, headache and some tenderness of arm and axillary glands but no elevation of temperature was discovered. The dose was administered in the afternoon, thus allowing the onset of the reaction to be over during the first night. No one experienced the effect of the vaccination longer than thirty-six hours.

The second dose will be administered Thursday, December 15th at 4 p. m. —*Field Hosp. Bulletin, N. G. Mo., Dec.* 8, 1910.

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STATION LIST OF OFFICERS

OF THE

MEDICAL CORPS AND MEDICAL RESERVE CORPS

U. S. Army

DECEMBER 21, 1910

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STATION LIST OF OFFICERS

OF THE

Medical Corps and Medical Reserve Corps, U. S. Army

DECEMBER 21, 1910

Name and Rank	*Duty and Station*
SURGEON GENERAL.	
With the rank of Brigadier General.	
George H. Torney.....	Surgeon General, United States Army.
COLONELS.	
Joseph B. Girard.....	Chief Surgeon, Headquarters, Department of Texas, San Antonio, Texas.
William C. Gorgas.....	Chief Sanitary Officer, Isthmian Canal Commission, Ancon, Canal Zone, Isthmus of Panama.
John Van R. Hoff.....	Chief Surgeon, Headquarters, Department of the East, Fort Jay, New York.
Louis M. Maus.....	Chief Surgeon, Headquarters, Department of the Lakes, Chicago, Illinois.
Blair D. Taylor.....	Chief Surgeon, Headquarters, Department of the Gulf, Atlanta, Georgia.
Louis W. Crampton....	Chief Surgeon, Headquarters, Philippines Division, Manila, P. I.
Daniel M. Appel.....	Chief Surgeon, Headquarters, Department of the Gulf, Atlanta, Georgia.
Harry O. Perley.....	Chief Surgeon, Headquarters, Department of the Colorado, Denver, Colorado.
William B. Davis.....	Chief Surgeon, Headquarters, Department of Luzon, Manila, P. I.
William W. Gray.....	Chief Surgeon, Headquarters, Department of Dakota, St. Paul, Minnesota.
Louis Brechemin.....	Commanding Division Hospital, Manila, P. I.
Louis A. La Garde.....	In charge Museum and Library Division, Surgeon General's Office.
John M. Banister.....	Chief Surgeon, Headquarters, Department of the Missouri, Omaha, Nebraska.
Aaron H. Appel.....	Surgeon, Fort D. A. Russell, Wyoming.
Charles Richard.....	Chief Surgeon, Headquarters, Department of Mindanao, Zamboanga, P. I.
LIEUTENANT COLONELS.	
Rudolph G. Ebert.....	Chief Surgeon, Headquarters, Department of the Columbia, Vancouver Barracks, Washington.
William H. Arthur.....	Commanding Walter Reed Army General Hospital, Washington, D. C.
George E. Bushnell....	Commanding Army General Hospital, Fort Bayard, New Mexico.
Henry P. Birmingham..	Temporary duty in Surgeon General's Office.
William Stephenson....	Surgeon, Fort Leavenworth, Kansas.
John L. Phillips.....	Ancon, Canal Zone, Isthmus of Panama.
Guy L. Edie.....	Attending Surgeon, 1720 H Street N. W., Washington, D. C.
William D. Crosby.....	Attending Surgeon, Soldiers' Home, Washington, D. C.
Charles M. Gandy.....	Chief Surgeon, Headquarters, Department of California, San Francisco, California.
Walter D. McCaw.....	In charge of Library Division, Surgeon General's Office.
Jefferson R. Kean.....	In charge of Sanitary Division, Surgeon General's Office.
Henry I. Raymond.....	Chief Surgeon, Headquarters, Department of the Visayas, Iloilo, P. I.
Henry S. T. Harris.....	In charge of Medical Supply Depot, 1018 North Point Street, San Francisco, California.

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Name and Rank.	*Duty and Station.*
LIEUT. COLONELS—Con.	
William P. Kendall....	Surgeon, Fort Riley, Kansas.
William B. Banister....	Surgeon, Fort Snelling, Minnesota.
Charles E. Woodruff...	Manila, P. I.
Charles F. Mason.....	Ancon, Canal Zone, Isthmus of Panama.
James D. Glennan.....	Commanding Army General Hospital, Presidio of San Francisco, Cal.
Alfred E. Bradley.....	Manila, P. I.
Euclid B. Frick.....	Surgeon, Presidio of San Francisco, California.
Frank R. Keefer.....	Surgeon, West Point, New York.
MAJORS.	
Charles Willcox.....	Surgeon, Fort Sheridan, Ill.
Thomas U. Raymond..	Manila, P. I.
Henry D. Snyder.....	In charge Medical Supply Depot, St. Louis, Mo.
Philip G. Wales.....	Surgeon, Presidio of Monterey, Cal.
Allen M. Smith.....	Surgeon, Fort Sam Houston, Texas.
Joseph T. Clarke.....	Surgeon, Fort Crook, Nebraska.
Merritte W. Ireland....	In charge of Personnel Division, Surgeon General's Office.
Henry C. Fisher.....	Surgeon, Columbus Barracks, Columbus, Ohio.
Henry A. Shaw.....	Manila, P. I.
Francis A. Winter.....	In charge of Supply Division, Surgeon General's Office, and Disbursing Officer, Medical Department, U. S. Army.
William E. Purviance..	Manila, P. I.
George D. Deshon.....	Commanding Army and Navy General Hospital, Hot Springs, Arkansas.
Champe C. McCullough, Jr.	Manila, P. I.
Frederick P. Reynolds.	Surgeon, Fort Monroe, Virginia.
Paul F. Straub.....	General Staff.
Alexander N. Stark....	Surgeon, Fort Adams, R. I.
Charles Lynch.....	Special duty, Surgeon General's Office.
Edward L. Munson.....	Instructor, Army Staff College, Fort Leavenworth, Kansas.
James M. Kennedy.....	Surgeon, Fort Shafter, Honolulu, H. T.
Deane C. Howard.....	Surgeon, Jefferson Barracks, Mo.
William H. Wilson....	Manila, P. I.
William F. Lewis.....	Manila, P. I.
Thomas S. Bratton.....	Manila, P. I.
Thomas J. Kirkpatrick.	Manila, P. I.
John H. Stone.....	Surgeon, Fort McIntosh, Texas.
Irving W. Rand.....	Surgeon, Fort Hancock, New Jersey.
Powell C. Fauntleroy...	Surgeon, Fort Benjamin Harrison, Indiana.
James S. Wilson.....	Surgeon, Fort Ethan Allen, Vermont.
Basil H. Dutcher.....	Surgeon, Plattsburg Barracks, New York.
Leigh A. Fuller.....	Fort Leavenworth, Kansas.
George A. Skinner.....	Fort D. A. Russell, Wyoming.
Carl R. Darnall.....	Commanding Field Supply Depot, 339 Pennsylvania Avenue N. W., Washington, D. C.
Henry Page.....	Manila, P. I.
Bailey K. Ashford.....	Surgeon, San Juan, Porto Rico.
Henry A. Webber.....	Surgeon, Fort Niagara, New York.
Jere B. Clayton.....	Surgeon, Vancouver Barracks, Wash.
Weston P. Chamberlain.	Manila, P. I.
Edward R. Schreiner...	Surgeon, Boise Barracks, Idaho.
Frederick M. Hartsock.	Fort Wayne, Michigan.
Douglas F. Duval.....	Surgeon, Fort Sill, Oklahoma.
Clarence J. Manly.....	Surgeon, Fort Douglas, Utah.
David Baker.....	Surgeon, Fort McPherson, Georgia.
Albert E. Truby.....	Manila, P. I.
James R. Church.....	Surgeon, Fort Williams, Me.
Joseph H. Ford.....	Surgeon, Fort Wadsworth, N. Y.
Percy M. Ashburn.....	Army General Hospital, Presidio of San Francisco, California.
Elmer A. Dean.....	Surgeon, Fort George Wright, Washington.
Francis M. Usher.....	Fort Sam Houston, Texas.
Willard F. Truby.....	Surgeon, Fort Worden, Washington.
Frederick F. Russell...	Curator, Army Medical Museum, Surgeon General's Office.
Edwin P. Wolfe.....	In charge Medical Supply Depot, 260-3 West Street, New York City, N. Y.
Henry S. Greenleaf.....	Surgeon, Madison Barracks, New York.
Louis T. Hess.....	Surgeon, Fort Hamilton, New York.
Christopher C. Collins..	Surgeon, Fort Robinson, Nebr.
Benjamin J. Edger, Jr.	Surgeon, Fort Meade, South Dakota.
Samuel M. Waterhouse.	Surgeon, Fort Washington, Md.
Eugene H. Hartnett....	Surgeon, Fort Du Pont, Delaware.
Clyde S. Ford.....	Surgeon, Fort Wm. Henry Harrison, Montana.
Charles E. Marrow.....	Surgeon, Fort Lawton, Washington.

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Name and Rank	Duty and Station
MAJORS—Con.	
M. A. W. Shockley	Manila, P. I.
Robert N. Winn	Surgeon, Fort Logan H. Roots, Arkansas.
Theodore C. Lyster	Manila, P. I.
Sanford H. Wadhams	Surgeon, Fort Slocum, N. Y.
Chandler P. Robbins	Surgeon, Fort McHenry, Md.
Thomas L. Rhoads	Walter Reed Army General Hospital, Washington, D. C.
Harry L. Gilchrist	Surgeon, Fort Omaha, Nebraska.
William J. L. Lyster	Surgeon, Fort Oglethorpe, Georgia.
Elbert E. Persons	Surgeon, Fort Jay, New York.
William N. Bispham	Surgeon, Military Prison, Fort Leavenworth, Kansas.
Edward F. Geddings	Surgeon, Fort Howard, Maryland.
Arthur W. Morse	Manila, P. I.
Frank C. Baker	Surgeon, Fort Moultrie, South Carolina.
Charles R. Reynolds	Surgeon, Washington Barracks, Washington, D. C.
Paul C. Hutton	Fort Snelling, Minnesota.
Frederick A. Dale	Surgeon, Fort Lincoln, North Dakota.
William M. Roberts	Surgeon, Fort Thomas, Kentucky.
Jay R. Shook	Surgeon, Fort Logan, Colo.
William E. Vose	Surgeon, Jackson Barracks, La.
Frank T. Woodbury	Surgeon, Fort Assinniboine, Mont.
Henry H. Rutherford	Fort Totten, N. Y.
Ernest L. Ruffner	Surgeon, Fort Missoula, Mont.
William H. Brooks	Surgeon, Fort McDowell, Cal.
Eugene R. Whitmore	Manila, P. I.
Patrick H. McAndrew	Surgeon, Fort Terry, N. Y.
Charles Y. Brownlee	Surgeon, Fort Des Moines, Iowa.
John A. Murtagh	Fort Leavenworth, Kansas.
George M. Ekwurzel	Surgeon, Fort Mackenzie, Wyo.
Gideon McD. Van Poole	Fort Sheridan, Illinois.
William W. Reno	Surgeon, Fort McKinley, Maine.
Carroll D. Buck	Surgeon, Alcatraz Island, Cal.
George H. R. Gosman	Surgeon, Fort Barrancas, Florida.
Conrad E. Koerper	General Hospital, Fort Bayard, N. Mex.
John H. Allen	Surgeon, Fort Myer, Va.
Robert U. Patterson	Surgeon, Fort Banks, Mass.
Roderick P. O'Connor	Surgeon, Fort Screven, Ga.
Robert E. Noble	Ancon, Canal Zone, Isthmus of Panama.
James W. Van Dusen	Fort Riley, Kans.
Roger Brooke, Jr	Manila, P. I.
Wallace De Witt	Surgeon, Schofield Barracks, Honolulu, H. T.
Robert M. Thornborough.	Surgeon, Pacific Branch U. S. Military Prison, Alcatraz Island, California.
Robert B. Grubbs	Surgeon, Fort Bliss, Texas.
CAPTAINS.	
Matthew A. De Laney	Attending Surgeon's Office, 1720 H Street N. W., Washington, D. C.
Horace D. Bloombergh	Manila, P. I.
Paul S. Halloran	Walter Reed Army General Hospital, Washington, D. C.
Kent Nelson	Surgeon, Whipple Barracks, Ariz.
Peter C. Field	Fort Slocum, New York.
Herbert G. Shaw	Manila, P. I.
Louis Brechemin, Jr	Army General Hospital, Presidio of San Francisco, Cal.
Lloyd Le R. Krebs	Surgeon, Fort Baker, California.
William P. Woodall	Fort D. A. Russell, Wyoming.
Clement C. Whitcomb	Medical Supply Depot, New York City, 543 Greenwich Street, New York City.
George H. Crabtree	Ancon, Canal Zone, Isthmus of Panama.
Wilson T. Davidson	Recruit Depot, Columbus Barracks, Ohio.
Herbert M. Smith	Attending Surgeon, Philadelphia, Pa.
Park Howell	Surgeon, Fort Huachuca, Arizona.
Cosam J. Bartlett	Surgeon, Fort Andrews, Massachusetts.
Reuben B. Miller	Army and Navy General Hospital, Hot Springs, Arkansas.
Charles A. Ragan	Walter Reed Army General Hospital, Washington, D. C.
William R. Eastman	Attending Surgeon, New York City.
James F. Hall	Attending Surgeon, Chicago, Illinois.
Raymond F. Metcalfe	Army General Hospital, Presidio of San Francisco, Cal.
Edwin W. Rich	Surgeon, Fort Mason, Cal.

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Name and Rank.	Duty and Station.
CAPTAINS—Con.	
Perry L. Boyer	Surgeon, Fort Clark, Texas.
James M. Phalen	Columbus Barracks, Ohio.
James L. Bevans	Commanding Officer, Co. B, Hospital Corps, Presidio of San Francisco, California.
William L. Little	Fort Adams, Rhode Island.
Allie W. Williams	Surgeon, Fort H. G. Wright, New York.
John L. Shepherd	Manila, P. I.
William L. Keller	West Point, New York.
Charles C. Billingslea	Army General Hospital, Presidio of San Francisco, California.
William H. Moncrief	Manila, P. I.
Nelson Gapen	Army and Navy General Hospital, Hot Springs, Arkansas.
William T. Davis	Attending Surgeon's Office, 1720 H Street N. W., Washington, D. C.
Charles F. Morse	Surgeon, Schofield Barracks, H. T.
Haywood S. Hansell	Manila, P. I.
Junius C. Gregory	Manila, P. I.
Clarence H. Connor	Surgeon, Fort Brady, Mich.
Jay W. Grissinger	Fort Des Moines, Iowa.
Will L. Pyles	Fort Mackenzie, Wyoming.
William M. Smart	Fort Flagler, Washington.
Henry S. Purnell	Manila, P. I.
Robert M. Blanchard	Fort Sheridan, Illinois.
James Bourke	Fort Leavenworth, Kansas.
Samuel M. De Loffre	Surgeon, Fort Bliss, Texas.
Louis C. Duncan	Manila, P. I.
Edward M. Talbott	Commanding Co. A, Hospital Corps, Fort D. A. Russell, Wyo.
John A. Clark	Plattsburg Barracks, New York.
Samuel J. Morris	Manila, P. I.
Jacob M. Coffin	Manila, P. I.
John W. Hanner	Manila, P. I.
Levy M. Hathaway	Presidio of Monterey, California.
Alexander Murray	Surgeon, Fort Casey, Washington.
Philip W. Huntington	Manila, P. I.
James D. Fife	Fort Slocum, New York.
William A. Powell	Manila, P. I.
Jesse R. Harris	Surgeon, Fort Gibbon, Alaska.
George H. Scott	Manila, P. I.
Edwin D. Kilbourne	Manila, P. I.
Robert L. Carswell	Manila, P. I.
Robert L. Richards	Army General Hospital, Presidio of San Francisco, California.
Charles F. Craig	Assistant Curator, Army Medical Museum, Surgeon General's Office.
William P. Banta	Manila, P. I.
Robert H. Pierson	Vancouver Barracks, Washington.
James I. Mabee	Jefferson Barracks, Missouri.
George P. Peed	Fort Monroe, Virginia.
Ralph S. Porter	Army General Hospital, Fort Bayard, N. Mex.
Henry D. Thomason	Division of Militia Affairs, War Department, Washington, D. C.
Percy L. Jones	Fort D. A. Russell, Wyoming.
Fred W. Palmer	Surgeon, Fort William H. Seward, Alaska.
Edward B. Vedder	Manila, P. I.
Henry F. Pipes	Walter Reed Army General Hospital, Washington, D. C.
Charles L. Foster	Manila, P. I.
John R. Bosley	Manila, P. I.
Robert C. Loving	Manila, P. I.
Orville G. Brown	Manila, P. I.
George F. Juenemann	Fort Logan, Colorado.
Joseph F. Siler	Medical Supply Depot, New York City.
Arthur M. Whaley	Surgeon, Fort St. Michael, Alaska.
Theodore Lamson	Manila, P. I.
Craig R. Snyder	Manila, P. I.
Ernest G. Bingham	Manila, P. I.
James D. Heysinger	Manila, P. I.
Lloyd L. Smith	Special Duty, Surgeon General's Office.
John B. Huggins	Manila, P. I.
Edgar W. Miller	Fort Ontario, New York.
William H. Tefft	Army General Hospital, Fort Bayard, N. Mex.
William R. Davis	Surgeon, Fort Porter, New York.
Leartus J. Owen	Fort Benjamin Harrison, Indiana.
Robert M. Culler	Schofield Barracks, H. T.

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Name and Rank.	*Duty and Station*
CAPTAINS—Con.	
Frank W. Weed.....	Fort Totten, New York.
William A. Wickline...	Commanding Co. "C," Hospital Corps, Walter Reed Army General Hospital, Washington, D. C.
Henry L. Brown.....	Fort Morgan, Ala.
Howard H. Bailey.....	Surgeon, Fort Myer, Va.
Harry G. Humphreys...	Fort Wadsworth, New York.
Paul L. Freeman.....	Fort Riley, Kansas.
William A. Duncan....	Vancouver Barracks, Wash.
Earl H. Bruns.....	Army General Hospital, Fort Bayard, N. Mex.
Herbert C. Gibner.....	Fort McDowell, California.
Clarence LeRoy Cole...	Fort Logan, Colorado.
Albert G. Love.....	Surgeon General's Office, Washington, D. C.
Harold W. Jones.....	Walter Reed Army General Hospital, Washington, D. C.
Omar W. Pinkston.....	Fort Meade, South Dakota.
Matthew A. Reasoner..	Vancouver Barracks, Washington.
Henry J. Nichols.....	Army Medical School, Washington, D. C.
Louis H. Hanson.....	Fort Hamilton, New York.
Lucius L. Hopwood....	Fort Monroe, Virginia.
Charles E. Freeman....	Surgeon, Fort Miley, California.
Ferdinand Schmitter...	Fort Slocum, New York.
Henry B. McIntyre.....	Fort Caswell, North Carolina.
Frederick S. Macy.....	Fort Stevens, Oregon.
Guy V. Rukke.....	Army General Hospital, Presidio of San Francisco, California.
Henry C. Pillsbury.....	Jefferson Barracks, Missouri.
Edgar King.....	Fort McDowell, California.
Arthur C. Christie.....	Columbus Barracks, Ohio.
Howard H. Johnson....	Fort McDowell, California.
Ray W. Bryan.....	Jefferson Barracks, Missouri.
William H. Richardson.	Army General Hospital, Presidio of San Francisco, California.
William K. Bartlett....	Fort Oglethorpe, Georgia.
FIRST LIEUTENANTS.	
John R. Barber.....	Manila, P. I.
Joseph A. Worthington.	Manila, P. I.
Mahlon Ashford.....	Manila, P. I.
Edward G. Huber.....	Manila, P. I.
John S. Lamble, Jr.....	Manila, P. I.
Arthur N. Tasker.....	Presidio of San Francisco, California.
Howard M. Snyder.....	Manila, P. I.
Calvin D. Cowles, Jr...	West Point, N. Y.
Garfield L. McKinney...	Army General Hospital, Presidio of San Francisco, Cal.
Hiram A. Phillips.....	Fort Andrews, Massachusetts.
William L. Hart.....	Manila, P. I.
Henry C. Coburn, Jr....	Manila, P. I.
Arnold D. Tuttle.....	Manila, P. I.
John B. H. Waring.....	Manila, P. I.
William R. Dear.....	Manila, P. I.
Charles E. Doerr.....	Manila, P. I.
Daniel P. Card.....	Manila, P. I.
Ralph H. Goldthwaite..	Manila, P. I.
Frederick S. Wright...	Manila, P. I.
Daniel W. Harmon....	Manila, P. I.
James C. Magee.....	Manila, P. I.
Codydon G. Snow.....	Manila, P. I
Norman L. McDiarmid.	Manila, P. I.
Clarence A. Treuholtz...	Manila, P. I.
Eben C. Hill.....	Madison Barracks, New York.
George H. McLellan....	Manila, P. I.
Alexander D. Parce....	Manila, P. I.
James A. Wilson.....	Manila, P. I.
Armin Mueller.....	Manila, P. I.
Thomas J. Leary.....	Manila, P. I.
Moddison C. Stayer....	Manila, P. I.
Robert W. Kerr.....	Manila, P. I.
Lee R. Dunbar.....	Manila, P. I.
Leon C. Garcia.....	Fort McDowell, California.
William S. Shields.....	Manila, P. I.
Addison D. Davis.....	Manila, P. I.

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Name and Rank	*Duty and Station*
FIRST LIEUTS.—Con.	
William H. Smith	Fort Shafter, H. T.
Clarence E. Fronk	Manila, P. I.
Roxier C. Bayly	Manila, P. I.
George D. Heath, Jr.	Manila, P. I.
Albert S. Bowen	Fort Snelling, Minnesota.
Ernest R. Gentry	Fort Leavenworth, Kansas.
Roy C. Heflebower	Fort Bayard, N. Mex.
George M. Edwards	West Point, New York.
George B. Foster, Jr.	Army Medical School, Washington, D. C.
Joseph Casper	Fort Du Pont, Delaware.
Henry Beeuwkes	Fort Jay, New York.
Edward M. Welles, Jr.	Army General Hospital, Presidio of San Francisco, California.
Condon C. McCornack	Vancouver Barracks, Washington.
William H. Thearle	Fort Leavenworth, Kansas.
Glenn I. Jones	Fort McDowell, California.
George W. Cook	Fort Douglas, Utah.
Charles C. Demmer	Schofield Barracks, H. T.
Charles T. King	Manila, P. I.
Thomas H. Johnson	Fort Baker, California.
William H. Allen	Fort Slocum, New York.
Larry B. McAfee	Army and Navy General Hospital, Hot Springs, Arkansas.
Adam E. Schlanser	Co. "C," Walter Reed Army General Hospital, Washington, D. C.
Carl E Holmberg	Presidio of San Francisco, California.
John P. Fletcher	Fort D. A. Russell, Wyoming.
Joseph E. Bastion	Co. "C," Walter Reed Army General Hospital, Washington, D. C.
Thomas D. Woodson	Vancouver Barracks, Washington.
Alexander A. Cooper	Presidio of San Francisco, California.
John T. Aydelotte	Fort Sam Houston, Texas.
Taylor E. Darby	Fort McPherson, Georgia.
Thomas C. Austin	Co. "B," Hospital Corps, Presidio of San Francisco, California.
Mark D. Weed	Manila, P. I.
Edward D. Kremers	Presidio of San Francisco, California.
William B. Carr	Fort Monroe, Virginia.
Charles W. Haverkampf	Fort D. A. Russell, Wyoming.
Harry R. Beery	Fort Benjamin Harrison, Indiana.
James R. Mount	Fort Sheridan, Illinois.
Royal Reynolds	Co. "B," Hospital Corps, Presidio of San Francisco, California.
James S. Fox	Fort Sam Houston, Texas.
Felix R. Hill	Fort George Wright, Washington.
Ralph G. DeVoe	Fort Worden, Washington.
Wayne H. Crum	Madison Barracks, New York.
John A. Burket	Fort Riley, Kansas.
Wibb E. Cooper	Fort D. A. Russell, Wyoming.
Thomas L. Ferenbaugh	Fort Des Moines, Iowa.
William L. Sheep	Fort Ethan Allen, Vermont.
Edgar C. Jones	Fort Liscum, Alaska.
Arthur O. Davis	Fort Oglethorpe, Georgia.
Floyd Kramer	Manila, P. I.
Edward L. Napier	Army General Hospital, Presidio of San Francisco, Cal.
Owen C. Fisk	Fort Crook, Nebraska.
Robert W. Holmes	Plattsburg Barracks, New York.
Howard A. Knox	Fort Hancock, New Jersey.
Harry B. Etter	Fort Snelling, Minnesota.
Cole W. Davis	Manila, P. I.
Llewellyn P. Williamson.	Fort D. A. Russell, Wyoming.
FIRST LIEUTENANTS.	
Medical Reserve Corps, on Active Duty.	
William F. de Niedman	Manila, P. I.
Ira C. Brown	Fort Lawton, Washington.
John R. Hereford	Surgeon, Fort Dade, Florida.
Albert H. Eber	Fort Moultrie, South Carolina.
Isaac W Brewer	Manila, P. I.
Joseph L Sanford	Fort Ruger, H. T.
Charles H. Stearns	Manila, P. I.

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Name and Rank	*Duty and Station*
FIRST LIEUTS.—Con.	
Medical Reserve Corps, on Active Duty.	
George S. Wallace	Fort Sam Houston, Texas.
Frank E. Artaud	Key West Barracks, Florida.
Waller H. Dade	Manila, P. I.
Wilson Murray	Fort William Henry Harrison, Montana.
Clark I. Wertenbaker	Fort Gibbon, Alaska.
Elmer S. Tenney	Manila, P. I.
James S. Kennedy	Manila, P. I.
Walter Whitney	Fort McPherson, Georgia.
Albert L. Miller	Fort Meade, South Dakota.
J. Marchal Wheate	Fort Lincoln, North Dakota.
Frederick H. Sparrenberger.	Manila, P. I.
Henry W. Elliot	Fort McKinley, Maine.
George W. Daywalt	Manila, P. I.
Thomas W. Jackson	Surgeon, Fort Hunt, Virginia.
William O. Cutliffe	Fort McIntosh, Texas.
Michael E. Hughes	Fort Rodman, Massachusetts.
Donald P. McCord	Fort George Wright, Washington.
Henry du R. Phelan	Fort De Russy, H. T.
Luke B. Peck	Manila, P. I.
James B. Pascoe	Fort Wood, New York.
Thomas S. Lowe	Fort Shafter, H. T.
Ernest K. Johnstone	Presidio of San Francisco, California.
Julius C. LeHardy	Manila, P. I.
Charles E. MacDonald	Surgeon, Fort Mott, New Jersey.
James B. Ferguson	Surgeon, Transport Dix, Seattle, Washington. On leave.
Victor E. Watkins	Manila, P. I.
Herbert I. Harris	Fort Snelling, Minnesota.
Leonard S. Hughes	Army Medical School, Washington, D. C.
George Newlove	Fort Brady, Michigan.
Edward Bailey	Army Transport Service, Seattle, Wash.
James C. Dougherty	Fort Bliss, Texas.
Charles L. Baker	Presidio of San Francisco, California.
Frederick H. Mills	Fort Missoula, Mont.
David D. Hogan	Manila, P. I.
Edwin W. Patterson	Manila, P. I.
John F. Leeper	Surgeon, Fort Duchesne, Utah.
Leonard P. Bell	Fort Riley, Kansas.
John N. Merrick	Benicia Arsenal, California.
Benjamin B. Warriner	Alcatraz Island, California.
William J. Enders	Manila, P. I.
Thomas B. McCown	Fort Barrancas, Florida.
Madison H. Bowman	Presidio of Monterey, California.
Harry H. Van Kirk	Manila, P. I.
Clarence F. Dickenson	Surgeon, Fort Barry, California.
Fred T. Koyle	Fort Mansfield, Rhode Island.
Robert E. Sievers	Fort Warren, Massachusetts.
Francis M. Wall	Manila, P. I.
Alpha M. Chase	Manila, P. I.
Frank C. Griffis	Fort D. A. Russell, Wyoming.
Francis M. Wells	Surgeon, Fort Apache, Arizona.
Clemens W. McMillan	Army Medical School, Washington, D. C.
George R. Clayton	Fort Sheridan, Illinois.
Oscar F. Davis	Fort Mackenzie, Wyoming.
Preston S. Kellogg	Fort Yellowstone, Wyoming.
Joseph W. Love	Surgeon, Fort Preble, Maine.
George B. Tuttle	Surgeon, Fort Columbia, Washington.
Polk D. Brown	Fort Sam Houston, Texas.
Harrison W. Stukey	Fort Greble, Rhode Island.
Everett A. Anderson	Surgeon, Fort Rosecrans, California.
Frederick E. Jenkins	Fort Leavenworth, Kansas.
John M. Hewitt	Military Prison, Fort Leavenworth, Kansas.
Ernest E. Roberts	Manila, P. I.
Frank Suggs	Fort Egbert, Alaska.
William E. Hall	Whipple Barracks, Ariz.
Edgar J. Farrow	Fort Morgan, Alabama.
George B. Jones	Fort Benjamin Harrison, Indiana.
Albion M Coffey	Fort St. Philip, Louisiana.
Herbert W. Yemans	Fort Wayne, Michigan.
Robert Lemmon	Manila, P. I.
Luis G. de Quevedo	San Juan, Porto Rico.
Thomas C. Walker	Fort Terry, New York.
Henry C. Bierbower	Fort Robinson, Nebraska.
O. F. Henning	Manila, P. I.
George F. Campbell	Fort Wingate, New Mexico.

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Name and Rank.	*Duty and Station.*
FIRST LIEUTS.—Con.	
Medical Reserve Corps, on Active Duty.	
William H. Myers	Fort Screven, Georgia.
Charles H. Halliday	Surgeon, Fort Fremont, South Carolina.
Charles T. Dulin	Army General Hospital, Fort Bayard, N. Mex.
Charles W. Cullen	Fort D. A. Russell, Wyoming.
George P. Stallman	Fort Douglas, Utah.
Fred J. Conzelmann	Manila, P. I.
Edmund W. Bayley	Manila, P. I.
Arthur C. Delacroix	Boise Barracks, Idaho.
Henry F. Lincoln	Manila, P. I.
Herbert L. Freeland	Manila, P. I.
Charles A. Tetrault	Fort Michie, New York.
William M. Archer, Jr.	Manila, P. I.
Ellsworth Wilson	Manila, P. I.
Howard Priest	Army General Hospital, Fort Bayard, N. Mex.
Percy G. Drake	Manila, P. I.
Henry R. Weston	Fort Strong, Massachusetts.
Ralph W. Newton	Fort Revere, Massachusetts.
James C. Ballard	Manila, P. I.
Thomas M. Foley	Henry Barracks, Porto Rico.
Maurice Buchsbaum	Manila, P. I.
Charles A. Betts	Manila, P. I.
Ziba L. Henry	Manila, P. I.
Alwin M. Guittard	Manila, P. I.
Rhodrick W. Browne	Manila, P. I.
Warren E. Kershner	Fort Hancock, New Jersey.
Herbert H. Smith	Manila, P. I.
Adolphe M. Giffin	Manila, P. I.
James A. Hayne	Fort Assinniboine, Montana.
Seaton Norman	Fort Leavenworth, Kansas.
Henry F Phillips	Manila, P. I.
Henry C. Michie, Jr.	Presidio of San Francisco, California.
Hyman M. Cohen	Manila, P. I.
John C. Griffin	Manila, P. I.
Robert H. Heterick	Army Medical School, Washington, D. C.
Lewis A. Lavanture	Manila, P. I.
William C. Lyon	Manila, P. I.
James A. Simpson	Presidio of Monterey, California.
William B. Borden	Army General Hospital, Fort Bayard, N. Mex.
Harley J. Hallett	Army Medical School, Washington, D. C.
Val E. Miltenberger	Manila, P. I.
Eugene G. Northington	Fort McPherson, Georgia.
Herbert H. Sharpe	Fort Jay, New York.
John W. Sherwood	Fort Williams, Maine.
John R. Bradley	Fort Leavenworth, Kansas.
Blase Cole	Army Medical School, Washington, D. C.
Thomas J. Flynn	Army Medical School, Washington, D. C.
Paul W. Gibson	Army Medical School, Washington, D. C.
Joseph H. Holland	Army Medical School, Washington, D. C.
Herman M. Bundesen	Army Medical School, Washington, D. C.
Joseph O. Walkup	Army Medical School, Washington, D. C.
Thomas W. Penrose	Manila, P. I.
Edgar F. Haines	Fort Moultrie, South Carolina.
James V. Van Horn	Manila, P. I.
Daniel F. Maguire	Army Medical School, Washington, D. C.
Moses H. Darnall	Fort Washington, Maryland.
Oswald F. Henning	Manila, P. I.
Waldemar A. Christensen.	Manila, P. I.
Harry B. Williams	Army Medical School, Washington, D. C.
John J. Reddy	Army Medical School, Washington, D. C.
Gilman C. Dolley	Army Medical School, Washington, D. C.
Walter O. Howell	Schofield Barracks, H. T.
Frederick H. Foucar	Army Medical School, Washington, D. C.
Bert R. Huntington	Army Medical School, Washington, D. C.
James D. Kerr	Army Medical School, Washington, D. C.
Robert C. McDonald	Army Medical School, Washington, D. C.
William F. McLaughlin	Army Medical School, Washington, D. C.
Henry C. Maddux	Army Medical School, Washington, D. C.
Shelley U. Marietta	Army Medical School, Washington, D. C.
Raymond W. Mills	Army Medical School, Washington, D. C.
Arthur L. Pulver	Army Medical School, Washington, D. C.
Edward C. Register	Army Medical School, Washington, D. C.
James L. Robinson	Army Medical School, Washington, D. C.
Jay D. Whitham	Army Medical School, Washington, D. C.
Leo C. Mudd	Army Medical School, Washington, D. C.
Howard Clarke	Army Medical School, Washington, D. C.

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FIRST LIEUTS.—Con.	
Medical Reserve Corps on Active Duty.	
Edwin B. Maynard	Fort Snelling, Minnesota.
Edward C. Lynch	Army Medical School, Washington, D. C.
Horace M. Roberson	Army Medical School, Washington, D. C.
Sanford W. French	Army Medical School, Washington, D. C.
John R. McKnight	Army Medical School, Washington, D. C.
George B. Lake	Army Medical School, Washington, D. C.
James H. Wilson	Army Medical School, Washington, D. C.
John S. Coulter	Army Medical School, Washington, D. C.
Frank N. Chilton	Army Medical School, Washington, D. C.
Alleyne von Schrader	Army Medical School, Washington, D. C.
John M. Willis	Army Medical School, Washington, D. C.
Harry G. Ford	Army Medical School, Washington, D. C.
Albert P Clark	Army Medical School, Washington, D. C.
Carl A. Scherer	Army Medical School, Washington, D. C.
Joseph L. Siner	Army Medical School, Washington, D. C.
James F. Johnston	Army Medical School, Washington, D. C.
William Denton	Army Medical School, Washington, D. C.
Charles E. McBrayer	Army Medical School, Washington, D. C.
Samuel S. Creighton	Army Medical School, Washington, D. C.
Lauren S Eckels	Army Medical School, Washington, D. C.
Edgar D. Craft	Army Medical School, Washington, D. C.
Fred R. Burnside	Army Medical School, Washington, D. C.
William T. Cade, Jr	Army Medical School, Washington, D. C.
George G Divins	Army Medical School, Washington, D. C.
[illegible]oyd A. Kefauver	Army Medical School, Washington, D. C.
Gordon B Underwood	Army Medical School, Washington, D. C.
Faris M. Blair	Army Medical School, Washington, D. C.
George E. Pariseau	Army Medical School, Washington, D. C.
Francis X. Strong	Army Medical School, Washington, D. C.
Henry P. Carter	Army Medical School, Washington, D. C.
Robert H. Gantt	Army Medical School, Washington, D. C.
John H.Trinder	Fort Jay, New York.

FIRST LIEUTENANTS.

Medical Reserve Corps, *not* on Active Duty.	*Residence.*
Orlando W. Sherwin	Woodstock, Vt.
Robert F. Weir	11 E. 54th Street, New York, N. Y.
Theodore A. McGraw	1710 Jefferson Avenue, Detroit, Mich.
Harry C. Yarrow	814 17th Street, Washington, D. C.
Walter S Thorne	Union Square Building, San Francisco, Cal.
Frank P. Foster	554 W. 114th Street, New York, N. Y.
Edmond Souchon	2403 St. Charles Avenue, New Orleans, La.
Louis F. Reynaud	1301 Calhoun Street, New Orleans, La.
Reginald H. Fitz	18 Arlington Street, Boston, Mass.
Henry O. Walker	612 Washington Arcade, Detroit, Mich.
Joseph D. Bryant	32 W. 48th Street, New York, N. Y.
John A. Wyeth	244 Lexington Avenue, New York, N. Y.
Francis P. Kinnicutt	39 E. 35th Street, New York, N. Y.
James C. Wilson	1509 Walnut Street, Philadelphia, Pa.
A. Alexander Smith	18 W. 51st Street, New York, N. Y.
Virgil P. Gibney	16 Park Avenue, New York, N. Y.
Frederick C. Shattuck	135 Marlborough Street, Boston, Mass.
Charles Beylard G. de Nancrede.	720 S. University Avenue, Ann Arbor, Mich.
J. Henry Carstens	620 Woodward Avenue, Detroit, Mich.
Thomas W. Huntington	2629 Pacific Avenue, San Francisco, Cal.
Frederick S. Dennis	62 E. 55th Street, New York, N. Y.
J. William White	1810 S. Rittenhouse Square, Philadelphia, Pa.
Myles Standish	6 St. James Avenue, Boston, Mass.
Victor C. Vaughan	Ann Arbor, Mich.
Robert Abbe	13 W. 50th Street, New York, N. Y.
Sanger Brown	Kenilworth, Ill.
Roswell Park	510 Delaware Avenue, Buffalo, N. Y.
William S. Halsted	1201 Eutaw Place, Baltimore, Md.
George H. Simmons	1672 Kenmore Avenue, Chicago, Ill.
Wm. T. Councilman	78 Bay Street, Boston, Mass.
Frank Billings	35 E. 22nd Street, Chicago, Ill.
Alvah H. Doty	Quarantine, Staten Island, New York.
Harry M. Sherman	2125 Jackson Street, San Francisco, Cal.
Samuel J. Mixter	180 Marlborough Street, Boston, Mass.
Richard H. Harte	1503 Spruce Street, Philadelphia, Pa.

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Medical Reserve Corps, *not* on Active Duty.	
William M. Conant	48 Commonwealth Avenue, Boston, Mass.
Carl Beck	37 E. 31st Street, New York, N. Y.
John H. Musser	1927 Chestnut Street, Philadelphia, Pa.
Charles S. Bacon	750 Sedgwick Street, Chicago, Ill.
William G. Thompson	34 E. 31st Street, New York, N. Y.
Robert T. Morris	616 Madison Avenue, New York, N. Y.
Harvey G. Mudd	Humboldt Building, St. Louis, Mo.
John B. Murphy	3305 Michigan Avenue, Chicago, Ill.
John C. Munro	173 Beacon Street, Boston, Mass.
Thomas Darlington	48 W. 59th Street, New York, N. Y.
Geo. E. de Schweinitz	1705 Walnut Street, Philadelphia, Pa.
Paul E. Archinard	1219 N. Rampart Avenue, New Orleans, La.
Theobald Smith	391 South Street, Forest Hill, Boston, Mass.
Edward Martin	1506 Locust Street, Philadelphia, Pa.
Samuel T. Armstrong	Katonah, N. Y.
Alexander C. Abbott	4229 Baltimore Avenue, Philadelphia, Pa.
Samuel Lloyd	12 W. 50th Street, New York, N. Y.
Charles L. Scudder	189 Beacon Street, Boston, Mass.
Henry B. Favill	412 E. Ontario Street, Chicago, Ill.
Rudolph Matas	2255 St. Charles Avenue, New Orleans, La.
Barton C. Hirst	1821 Spruce Street, Philadelphia, Pa.
Arthur D Bevan	2917 Michigan Avenue, Chicago, Ill.
Charles W. Richardson	1317 Connecticut Avenue, Washington, D. C.
Alexander Lambert	36 E. 31st Street, New York, N. Y.
William B. Coley	5 Park Avenue, New York, N. Y.
Charles B. Penrose	1720 Spruce Street, Philadelphia, Pa.
Angus McLean	67 Fort Street, West, Detroit, Mich.
Malcolm L. Harris	446 Dearborn Avenue, Chicago, Ill.
Hobart A. Hare	Spruce and 18th Streets, Philadelphia, Pa.
George F. Stewart	61 W. 50th Street, New York, N. Y.
Simon Flexner	105 E. 62nd Street, New York, N. Y.
John M. T. Finney	1300 Eutaw Place, Baltimore, Md.
James G. Mumford	29 Commonwealth Avenue, Boston, Mass.
Franklin G. Balch	279 Clarendon Street, Boston, Mass.
William S. Thayer	406 Cathedral Street, Baltimore, Md.
George W. Crile	1021 Prospect Avenue S. E., Cleveland, Ohio.
John C. DaCosta	2045 Walnut Street, Philadelphia, Pa.
Emmet Rixford	2694 Sacramento Street, San Francisco, Cal.
Robert G. LeConte	1625 Spruce Street, Philadelphia, Pa.
Charles G. Levison	Fairmont Hotel, San Francisco, Cal.
Emil O. Jellinek	2226 Washington Street, San Francisco, Cal.
Isadore Dyer	2222 Prytania Street, New Orleans, La.
John B. Blake	178 Beacon Street, Boston, Mass.
William F. Cheney	33 Spruce Street, San Francisco, Cal.
Lewis A. Conner	53 E. 49th Street, New York, N. Y.
Farrar Cobb	317 Marlborough Street, Boston, Mass.
John G. Clark	2017 Walnut Street, Philadelphia, Pa.
Joseph C. Bloodgood	923 N. Charles Street, Baltimore, Md.
Herbert C. Moffit	1818 Broadway, San Srancisco, Cal.
Wm. E. Schroeder	5476 Ellis Avenue, Chicago, Ill.
Albert J. Ochsner	710 Sedgwick Street, Chicago, Ill.
Albert E. Halstead	2937 Indiana Avenue, Chicago, Ill.
Richard C. Cabot	190 Marlborough Street, Boston, Mass.
Alfred Stengel	1811 Spruce Street, Philadelphia, Pa.
Wallace I. Terry	2019 Pacific Avenue, San Francisco, Cal.
William H. Haskin	42 E. 41st Street, New York, N. Y.
Harvey Cushing	107 E. Chase Street, Baltimore, Md.
David L. Edsall	1422 Pine Street, Philadelphia, Pa.
John W. Shields	323 Geary Street, San Francisco, Cal.
John T. Bottomley	165 Beacon Street, Boston, Mass.
Frederic A. Washburn	Massachusetts General Hospital, Boston, Mass.
Charles L. Mix	4321 Grenwood Avenue, Chicago, Ill.
Charles H. Frazier	1724 Spruce Street, Philadelphia, Pa.
John H. Gibbon	1608 Spruce Street, Philadelphia, Pa.
James F. Mitchell	1344 19th Street N. W., Washington, D. C.
Walter C. Howe	303 Beacon Street, Boston, Mass.
Bertram F. Alden	4200 California Street, San Francisco, Cal.
Albert J. Houston	Union Square Building, San Francisco, Cal.
William Pepper	1811 Spruce Street, Philadelphia, Pa.
Francis D. Patterson	2103 Locust Street, Philadelphia, Pa.
David Cheever	20 Hereford Street, Boston, Mass.
Harold L. Coffin	2009 E. Mercer Street, Seattle, Wash.
Arthur R. Jarrett	95 Halsey Street, Brooklyn, N. Y.
J. Samuel White	356 Cedar Street, St. Paul, Minn.
Elias H. Porter	Chehalis, Washington.

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FIRST LIEUTS.—Con.	
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Geo. E Chamberlain....	South Newbury, Vt.
Herbert C. Woolley....	Pitman, N. J.
George G. Craig.....	Rock Island, Ill.
William H. Pomeroy...	Springfield, Mass.
Zotique Rousseau.....	Troy, N. Y.
Julian A. Mead.....	Watertown, Mass.
William H. Ramsey....	Omaha, Nebr.
Samuel C. Stanton.....	Federal Building, Chicago, Ill.
Carlisle F. Ferrin.....	New London, Conn.
Nelson W. Wilson.....	222 Carolina Street, Buffalo, N. Y.
Edgar R. McGuire.....	470 Franklin Street, Buffalo, N. Y.
Frank S. Nicholson....	St. Paul, Nebr.
Chas. DeW. Colby.....	Dillsboro, N. C.
James A. Egan.....	Springfield, Ill.
Lester W. Lord.....	West Ossipee, N. H.
Wm. W. Plummer.....	523 Franklin Street, Buffalo, N. Y.
Edmund D. Shortlidge..	401 Lake Street, San Francisco, Cal.
John R. Devereux.....	819 W. Adams Street, Los Angeles, Cal.
Walter C. Chidester....	San Mateo, Cal.
Reynold M. Kirby-Smith.	Sewanee, Tenn.
Samuel E. Lambert....	The Fernwell, Spokane, Wash.
James F. Edwards.....	517 N. St. Clair Street, Pittsburg, Pa.
William E. Richards...	Columbus, Miss.
Edward W. Pinkham...	41 E. 41st Street, New York, N. Y.
Clarence B. Millhoff....	627 Franklin Street, Johnstown, Pa.
Howard W. Beall.....	55 Pearl Street, Worcester, Mass.
Jerome S. Chaffee.....	Sharon, Conn.
Felix E. Ashcroft.....	Deadwood, S. Dak.
Joseph F. Burnham....	239 Broadway, Lawrence, Mass.
John T. Burrus.....	High Point, N. C.
George A. Clotfelter....	Hillsboro, Ill.
George P. Coopernail...	Bedford, N. Y.
Guy P. Dillon.....	Sacramento, Cal.
Joseph L. Donhauser...	96 Chestnut Street, Albany, N. Y.
Edgar F. Hamlin.....	Slatersville, R. I.
Hans Hansen.....	Logan, Iowa.
James W. Hartigan....	The Hartigan Hospital, Morgantown, W. Va.
Charles B. Hollings....	267 Washington Avenue, Winthrop, Mass.
George C. Kieffer.....	1421 W. Girard Avenue, Philadelphia, Pa.
Fred E. Lettice.....	Schenectady, N. Y.
William Marshall, Jr...	Milford, Del.
Charles J. McGee.....	5th and Delaware Streets, Leavenworth, Kans.
Hugh T. Nelson.....	205 E. High Street, Charlottesville, Va.
Edward H. Skinner....	621 Commerce Building, Kansas City, Mo.
William H. Steer.....	1251 Pacific Street, Brooklyn, N. Y.
Irwin C. Sutton.....	Kearney, Nebr.
Matthew J. Shields.....	717 Pine Street, Scranton, Pa.
William J. Calvert.....	Columbia, Mo.
James M. Anders.....	1605 Walnut Street, Philadelphia, Pa.
William E. Ashton.....	2011 Walnut Street, Philadelphia, Pa.
L. Webster Fox.....	1304 Walnut Street, Philadelphia, Pa.
Ernest Laplace.....	1828 S. Rittenhouse Square, Philadelphia, Pa.
William L. Rodman....	1904 Chestnut Street, Philadelphia, Pa.
John Y. Brown.....	5089 McPherson Avenue, St. Louis, Mo.
Augustus Caille.....	753 Madison Avenue, New York, N. Y.
John C. Morfit.....	3518 Washington Avenue, St. Louis, Mo.
Arthur F. Chace.....	393 West End Avenue, New York, N. Y.
Edward E. Dorr.....	605 Citizens' Bank Building, Des Moines, Iowa.
John W. Keefe.....	43 Parkis Avenue, Providence, R. I.
John J. Kyle.....	226 Newton-Claypoole Building, Indianapolis, Ind.
Lewis L. McArthur.....	4724 Drexel Boulevard, Chicago, Ill.
Charles M. Rees.....	89½ Wentworth Street, Charleston, S. C.
Samuel C. Gurney.....	Manila, P. I.
William S. Magill.....	180th Street and Broadway, New York, N. Y.
Arlington Pond.....	Manila, P. I.
Walter Bensal.....	135 W. 87th Street, New York, N. Y.
Frederick G. Murray...	Kimball Building, Cedar Rapids, Iowa.
Edmund C. Brush.....	Zanesville, Ohio.
Frederick R. Green.....	5627 Prairie Avenue, Chicago, Ill.
Matthew C. McGannon..	118 8th Avenue N., Nashville, Tenn.
Gilbert E. Seaman.....	Milwaukee, Wis.
Henry L. Wagner.....	2303 East Street, San Francisco, Cal.
James P. Austin.....	43 W. Walnut Street, Germantown, Philadelphia, Pa.

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FIRST LIEUTS.—Con.	
Medical Reserve Corps, not on Active Duty.	
George C. Ballard	Poplarville, Miss.
Eliot Bishop	46 Gates Avenue, Brooklyn, N. Y.
Jesse M. Burlew	Santa Ana, Cal.
Henry W. Burnett	24 Diman Street, Providence, R. I.
William W. Conger	221 Main Street, Toledo, Ohio.
David H. Crawford	331 Bellville Avenue, Newark, N. J.
David Dale	Bellefonte, Pa.
Frank Deacon	460 E. 32nd Street, Chicago, Ill.
Julius A. Dosher	Southport, N. C.
Ernest G. Edwards	La Junta, Colo.
Philip B. Fry	Benicia, Cal.
James S. Gaumer	Fairfield, Iowa.
Hermann B. Gessner	1528 Louisiana Avenue, New Orleans, La.
Gustave Hartman	177 N. Common Street, Lynn, Mass.
Frederick A. Hunt	Jamesville, N. Y.
Edwin W. Janes	The Hyson, Tacoma, Wash.
David A. Kraker	236 Broad Street, Newark, N. J.
Emory Lanphear	3870 Delmar Boulevard, St. Louis, Mo.
Ignatz D. Loewy	Miraflores, Canal Zone, Panama.
Wm. F. McNutt, Jr	1800 O'Farrell Street, San Francisco, Cal.
Louis D. Mead	Butler Building, San Francisco, Cal.
Julius A. Muller	Snyder, Oklahoma.
Jesse B. Naftzger	Sturgis, S. Dak.
Alexander W. Nettelroth.	269 Baxter Avenue, Louisville, Ky.
Carlin Philips	250 W. 57th Street, New York, N. Y.
William L. Secor	Thornton Villa, La Grange, Ill.
Robert F. Sheehan, Jr.	265 Niagara Street, Buffalo, N. Y.
Surse J. Taylor	Cristobal, Canal Zone, Panama.
Edward A. Tobin	Bristol, Vt.
Norman E. Williamson.	Colon Hospital, Canal Zone, Panama.
Henry G. Webster	162 Halsey Street, Brooklyn, N. Y.
William A. White	Government Hospital for Insane, Washington, D. C.
C. Hugh McKenna	100 State Street, Chicago, Ill.
Charles W. Decker	656 W. 16th Street, Los Angeles, Cal.
Horace W. Patterson	61 Wall Street, New Brighton, Boston, Mass.
Thomas W. Bath	Bloomington, Ill.
Ralph C. Apted	40 Ransom Street, Grand Rapids, Mich.
Curtis Bland	Greensburg, Ind.
Charles F. Bowen	125 S. Grand Avenue, Columbus, Ohio.
Lercy E. Doolittle	Elma, Wash.
Fletcher Gardner	Bloomington, Ind.
William L. Gist	2950 Victor Street, Kansas City, Mo.
Richard T. Glyer	Marble, Minn.
William H. Hargis	304 Pierce Avenue, San Antonio, Tex.
Frederick T. Harris	Hope, Idaho.
Thomas W. Hastings	172 E. 71st Street, New York, N. Y.
Everett O. Jones	506 Cobb Building, Seattle, Wash.
Irwin Lindenberger	The Atherton, Louisville, Ky.
Walter H. Moursund	Laverina, Tex.
Frederick W. Shaw	11 Qumduo Boulevard, Kansas City, Mo.
William W. Keen	1729 Chestnut Street, Philadelphia, Pa.
William M. L. Coplin	606 S. 48th Street, Philadelphia, Pa.
William C. Posey	2049 Chestnut Street, Philadelphia, Pa.
Albert M. Fisher	Bismarck, N. Dak.
Frank Le M. Hupp	Wheeling, W. Va.
Whyte G. Owen	Whitecastle, La.
Reynold W. Wilcox	679 Madison Avenue, New York, N. Y.
Henry C. Coe	8 W. 76th Street, New York, N. Y.
Philip F. O'Hanlon	121 W. 95th Street, New York, N. Y.
Richard Slee	Nanuet, N. Y.
George M. Muren	11 E. 48th Street, New York, N. Y.
James J. Robert	611 N. Boulevard, Baton Rouge, La.
Martin W. Roan	Bismarck, N. Dak.
Frederick B. Strauss	Bismarck, N. Dak.
Charles B. Cooper	Honolulu, H. T.
George F. Shiels	75 W. 55th Street, San Francisco, Cal.
Patricinne J. H. Farrell.	92 State Street, Chicago, Ill.
Charles A. Speissegger, Jr.	89½ Wentworth Street, Charleston, S. C.
Henry R. Storrs	445 Granville Street, Vancouver, B. C.
Nathan P. Wood	700 Central Building, Seattle, Wash.
Thomas P. Doole	Brady, Tex.
Lazelle B. Sturdevant	2757 Holdredge, Lincoln, Nebr.
George H. Hungerford	5521 Spruce Street, Philadelphia, Pa.
Kerwin W. Kinard	129 N. Duke Street, Lancaster, Pa.
William A. Gills	409 Grace Street, East, Richmond, Va.
Henry A. Ingalls	**Roswell, N. Mex.**

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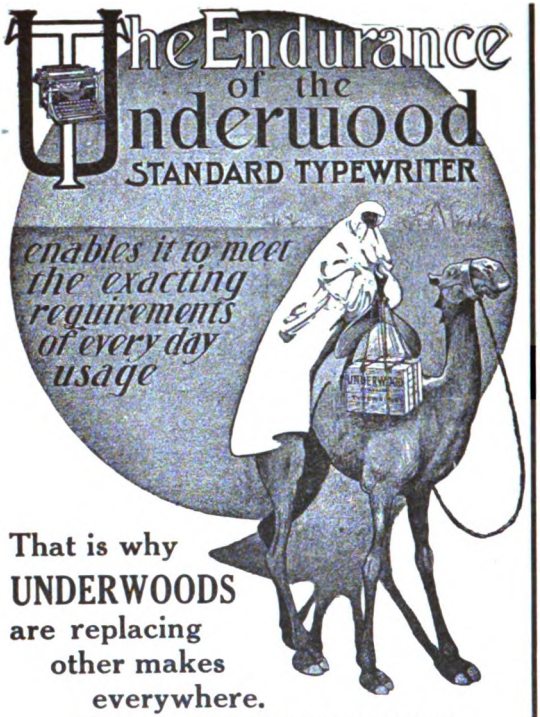
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Original Articles.

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ANEURYSMS IN THE ARMY MEDICAL MUSEUM, WASHINGTON, D. C.*

By D. S. Lamb, A. M., M. D., Army Medical Museum.

THE specimens, 116 in number, are in part from military and in part from civil life. All those received from the army were from men. The Museum therefore shows a larger proportion of aneurysms from men as compared with women, than museums generally do. There are a few specimens from the Navy and Marine-Hospital Service; a large number from the District of Columbia. Two specimens are from one case.

Of the 116 specimens, 72 are of the arch of the aorta, 7 of the thoracic aorta, 14 of the abdominal aorta, 5 of the innominate artery, 2 subclavian, 1 axillary, 1 coeliac axis, 1 superior mesenteric, 3 splenic, 3 iliac, 2 superficial femoral, 3 popliteal, 1 basilar, and one, of the heart. The ascending, transverse and descending parts of the arch were involved in the proportion of 7, 4, and 2.

In some of these cases the same specimen shows more than one distinct aneurysm; two or even three. It is not uncommon for an aneurysm of an artery to involve by extension more or less of one of its branches; as the innominate, carotid, or subclavian by extension from the arch of the aorta; the coeliac axis, superior mesenteric and iliac by extension from the abdominal aorta. More than one aneurysm may occur in the arch of the

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aorta, or the thoracic aorta; aneurysm may appear in both the arch and thoracic and even the abdominal aorta, all in the same specimen. Again, distinct aneurysm may occur in the same individual, in arteries in different parts of the body; as in one of the cases analyzed, in which both the basilar and splenic arteries were affected. If all these aneurysms were separately counted, the number 116 would be short of being correct.

This analysis of the 115 cases may add nothing to our knowledge of the subject, but should be of value so far as it supports the conclusions heretofore arrived at in regard to aneurysms; and to that extent seems to be worth the undertaking.

Aneurysms are said to occur in men seven times as often as in women. This disproportion is explained by the more frequent exposure to the causative factors to which men are subject. Of the 115 cases herein considered, 95 were in men, 8 in women, 12 not stated. This would give a proportion of men to women of 8.4 to 1.0 a somewhat higher percentage than that usually stated, and apparently explained by the fact of the large number of specimens received from the Army. There were no specimens received from any patient under 20 years old. The youngest age (where the age was stated) at which a patient died was 24 years; the oldest was 94. Between 20 and 30 years there were 10 cases; between 30 and 40 years 26; between 40 and 50 years 21; between 50 and 60 years 13; between 60 and 70 years 3; between 70 and 80 years 2; between 80 and 90 years 2; between 90 and 100 years 1; total cases in which the age was stated, 78. In 26 other cases the patient was an adult, but the age was not stated. This leaves 11 cases in which the age, youth or maturity, is doubtful. Somewhat over half the cases (60) were from patients between 30 and 60 years. In the woman 94 years old there was an aneurysm of the basilar and another of the splenic artery.

The cause of aneurysms—In but ten cases was a definite cause assigned for the aneurysm. One man was struck on the chest by a piece of timber after which he had periodical pain in his head and chest. Aneurysm of the aortic arch and innominate artery developed. Two men were shot. In one the axillary artery was injured and a traumatic aneurysm developed in the artery. In the other the splenic artery was injured and a traumatic aneurysm developed in it. In each case the aneurysm ruptured and the patient died from the hemorrhage. In seven cases a history of "strain" was given as the probable cause. In one it was stated

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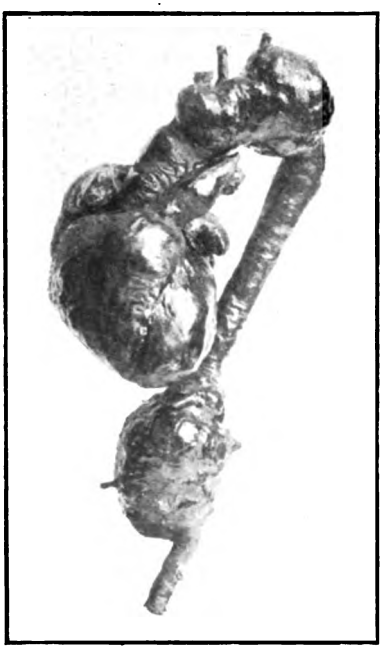
that in a collision between two vessels, the steward of one vessel in trying to board the other, was for sometime compelled to hold to the anchor, sustaining his own weight and that of another person who clung to him. Aneurysm of the subclavian developed. In another man an aneurysmal swelling of the abdominal aorta was diagnosticated some months after he had made unusual efforts at lifting boxes. Another man, a carpenter, while lifting heavy lumber, felt something "give way" and about a year afterwards while again lifting a heavy weight he felt something "give way" in his chest. Aneurysm of the aortic arch developed. Another man was "strained" while lifting logs, after which he had constant pain in the region of the 8th and 9th ribs and toward the umbilicus. Aneurysm of the thoracic aorta developed. An-

Specimen 8756. Abdominal aorta; aneurysm; rupture into abdominal cavity; fatal hemorrhage; erosion of lumbar vertebrae. Soldier, musician; pain in back and loins. Contributed by Dr. A. C. Girard, Assistant Surgeon, U. S. Army.



Specimen 7949. Aneurysm of transverse arch and abdominal aorta; rupture and fatal hemorrhage into abodmen. Soldier age 32; said to have had rheumatism; pulsating tumor; pain in epigastrium and back. Erosion of lumbar vertebrae; pulmonary tuberculosis. Contributed by Dr. A. T. Watson, Surgeon, U. S. Volunteers.

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other man "strained his chest" and several years afterwards aneurysm of the aortic arch developed. A cavalryman, while riding, "received a strain in his groin;" two days afterwards he noticed a swelling there and aneurysm of the superficial femoral developed. Another man, while carrying a heavy basket, had sudden epigastric pain and a feeling as if something had torn away. Within the year he had symptoms pointing to aneurysm of the abdominal aorta which had developed.

Just how much value attaches to such statements of cause as have just been named it is difficult if not impossible to say. It is so easy to argue *post hoc, ergo propter hoc.* But it does seem likely that if a bloodvessel is already diseased, a sudden sharp severe effort or a more persistent though less severe effort or *strain,* to use the usual word, may cause the vessel to yield. In 83 cases, 73 per cent, there was a definite statement that the vessel involved or the vessels generally were diseased; or the specimen itself showed the disease of the coats. In some other cases no doubt the absence of any such statement was simply an oversight. In fact it is altogether probable that with few exceptions aneurysms develop in vessels already diseased and that need only something unusual to occur, as an exciting cause of the aneurysm. It was stated in 11 cases that the individual had or had had syphilis; and in some cases it was stated that the individual did not have or had not had syphilis. It is difficult to get at the facts on this point, but it is probable that the number of patients who had had syphilis was greater than was reported.

Forms of Aneurysm.—Of the 116 specimens, 77 showed sacculation and 28 were fusiform; but of these 105, seven showed two aneurysms each, one sacculated the other fusiform. There were 10 dissecting aneurysms, one aneurysmal varix and one varicose aneurysm. It is evident that for some reason one side of the vessel in at least three-fourths of the cases is the weaker side and therefore more readily yields to the injury or whatever else may be the exciting cause.

Concerning the dissecting aneurysms the following may be stated. All of them involved the arch of the aorta, mostly the ascending portion, a few the transverse but none the descending portion except by extension. Some of the ruptures of the inner and middle coats were longitudinal, others transverse; in the latter case the edges were everted.

In one just above the aortic valve was an aneurysmal sac, and

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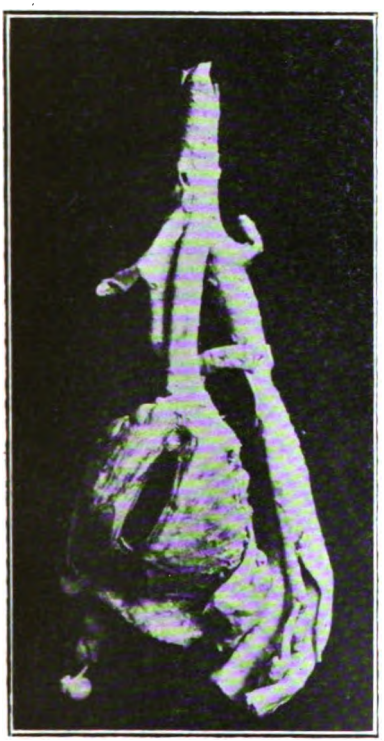
some dissection between the coats. In another there was an incipient dilatation of the ascending aorta and dissection between the coats. In a third, just above the aortic valve was a dissecting aneurysm that extended through the transverse portion. In a fourth the arch of the aorta was involved. In a fifth was a "T" shaped rupture in the floor of the transverse portion, the dissection extending both backwards to the aortic valve and downwards to nearly the aortic bifurcation. In a sixth there was some dilatation of the ascending aorta and a transverse rupture just above the aortic valve that dissected around the vessel; the edges everted. The wall of the vessel did not seem diseased but the heart weighed 35 oz., and showed valvular disease. In the seventh was a transverse rupture just above the aortic valve and en-



Specimen 7950. Superior mesenteric artery; aneurysm. Soldier age 24; 1863; pulsating tumor umbilical region, midline; died of intestinal ulceration. Contributor Dr. M. Goldsmith, Surgeon, U. S. Volunteers.

Specimen 2609. Axillary artery; traumatric aneurysm; ligation of subclavilan. Soldier age 28; shot 1863; rifle bullet; aneurysm appeared 15th day; hemorrhage 69th day; ligation 70th day; died 6 hours after operation. Contributed by Dr. Isaac Norris, Jr., Acting Assistant Surgeon, U. S. Army.

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circling the vessel; edges everted. Slight fatty degeneration of vessel wall. Heart weighed 27 oz. The eighth showed where an atheromatous patch had given way at the origin of the subclavian artery and the dissection had extended as far down as the diaphragm. In the ninth were two triangular rents just beyond the origin of the subclavian artery. In the tenth one inch above the aortic valve, was a transverse rupture.

The aneurysmal varix was of the left external iliac artery and vein. The history is briefly as follows: In a riot in 1876 a man was shot in the left thigh; the wound was not dressed, but a month afterwards appeared to have healed. Three months later an abscess appeared in the groin and discharged for eight months. In the winter of 1877-8 a pulsation was noticed in the groin; July, 1880, aneurysm was diagnosticated. October, 1881, he began to have pain there. March, 1882, compression was applied. Potassium iodide and ergot were given for a month, then stopped. Low diet. He had frequent ague-like paroxysms. Forcible flexion tried; then continual manual pressure. In August the external iliac artery was tied, but gangrene appeared in the wound and he died 22 hours after operation. The post mortem examination showed a firm clot in the artery above the ligature; the iliofemoral vein was enlarged. The case was reported in the Annual report of the Surgeon General of the Marine-Hospital Service for 1882, page 141.

The varicose aneurysm was in the neck; there was a multilocular dilatation of the left common carotid artery at its bifurcation and the internal jugular vein was dilated to two inches in diameter; the vessels communicated above and the sacs were filled with old and recent clots. The arterial sac ruptured into the surrounding tissues forming a false aneurysm which was also full of recent clot. The larynx and trachea had been displaced by the pressure, and their lumen narrowed. It is supposed that the cause of death was hemorrhage.

Of the 115 cases, in at least 76 the aneurysm ruptured; 5 of these formed diffuse aneurysm. Of the aneurysms that ruptured, 18 opened into the pericardium, 1 into the pleura and pericardium, 1 into the pericardium and pulmonary artery, 1 into the superior vena cava, 5 into the pleura, 4 into the lungs and pleura, 3 into the trachea, 6 into the bronchi, 2 into the mediastinum, 5 into the oesophagus, 2 into oesophagus and pleura, 1 into the stomach and abdominal cavity, 1 into the duodenum and abdominal cav-

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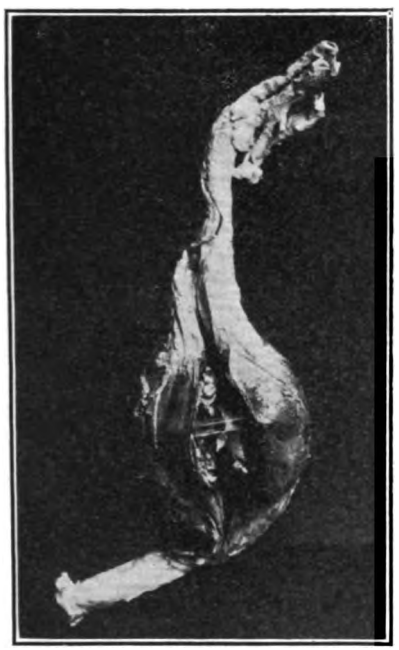
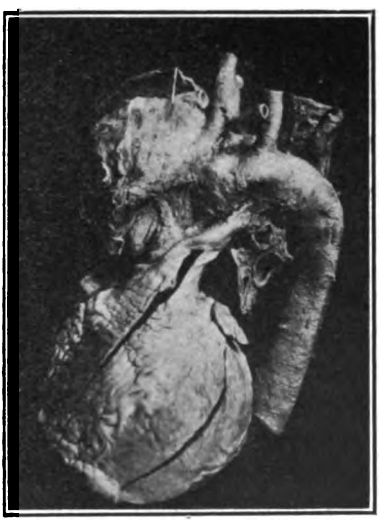
ity, 7 into the abdominal cavity alone, 2 into the retroperitoneal tissues, 1 into an abscess cavity, 4 ruptured externally, and in 8 the place of rupture is not stated.

The cases in which rupture occurred into the pericardium were as would be supposed, those in which the aortic arch, especially the ascending portion was involved in the aneurysm. In another case an aneurysmal sac of the ascending aorta ruptured into both



Specimen 10365. Superficial femoral artery; aneurysm; clot. Soldier; 1891; pressure applied and pulsation ceased; died from hemorrhage from rupture of thoracic aorta. Dr. W. H. Forwood, Surgeon, U. S. Army.



Specimen 8908. Arch of aorta; aneurysm. Soldier age 51; pain in chest and pulsation; died of pneumonia. Contributor, Dr. D. L. Huntington, Surgeon, U. S. Army.

pleura and pericardium, and also communicated with the innominate vein. This case was published in the National Medical Review, March, 1901, page 534. In another case an aneurysm of the ascending arch was composed of two sacs, one of which perforated the pulmonary artery, just above the valve, the other ruptured into the pericardium; death was caused by the hemorrhage into the pericardium A saccular aneurysm of the ascending aorta ruptured into the superior vena cava. The patient, a soldier, age 52, had made no complaint. Six hours before death

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he suddenly became excited; there was fullness of the head. dimness of vision, the face was swollen and cyanosed, eyes prominent, external and anterior jugular veins pulsated, internal jugular not affected; subclavian veins not affected; palpitation of heart, vomiting, marked thirst; severe interscapular pain that persisted till death. He died of dyspnoea, and the lungs were found full of blood.

The aneurysms that ruptured into the oesophagus were respectively 3 of the transverse arch, one of the descending arch, and one of the thoracic aorta. Two aneurysms, one of the transverse arch and subclavian origin, the other of the descending arch, ruptured into both oesophagus and pleura. An aneurysm of the abdominal aorta ruptured into the duodenum and peritoneum; and one of the thoracic aorta into the stomach and peritoneum. Of those that ruptured into the pleural cavity, one was of the transverse arch, one of the descending arch, two involved both thoracic and abdominal aorta, and one was of the abdominal aorta. Of those that ruptured into the lung and pleura, one was of the transverse and descending aorta, one of the descending aorta, and two of the thoracic aorta. Of those that ruptured into the trachea, one was of the ascending and transverse arch, and two of the innominate artery. Of those that ruptured into the bronchi, two were of the ascending and transverse arch, one of the transverse arch, one of the descending arch, one of the arch and thoracic aorta, and one of the arch. Of those that ruptured into the mediastinum one was of the descending aorta, the other of the ascending and transverse aorta. Of those that ruptured into the peritoneal cavity, one was of the transverse arch and abdominal aorta, four of the abdominal aorta, one of the celiac axis, and one of the splenic artery. The latter case was fully reported in the medical journals in 1881. Both cases in which rupture occurred into the retroperitoneal tissues were of the abdominal aorta. A subclavian artery aneurysm ruptured into an abscess cavity. This was the celebrated case in which the innominate artery was tied.

Of the cases in which the aneurysm ruptured externally, one was of the popliteal artery. The other three were of the arch of the aorta. One was of the ascending arch and perforated the sternum; another was of the transverse and descending arch, the sac projecting forwards through the chest wall; the third was of

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the ascending and descending arch and ruptured through some cervical suppurating glands.

In 51 cases it was stated or the specimen showed that death was caused by hemorrhage; probably from this cause also in other cases.

In 4 cases the aneurysm became diffuse. In one the popliteal artery was involved. The sac ruptured and the blood extravasated into the surrounding tissues, forming a hard swelling extending from the upper part of the thigh to the middle of the calf; the man, age 46, had intense paroxysmal pain. He was too weak to undergo amputation and died of exhaustion. In a second case the tissues around the abdominal aorta formed the wall of the sac. In a third case the abdominal aorta also was involved. The sac was composed of the diaphragm and adjacent tissues. The patient, a soldier, age 34, had constant lumbar pain, worse when lying down; dysphagia with frequent regurgitation of food; sometimes the food seemed to stop just above the stomach and after a short interval passed down; no nausea; emaciation. Suddenly he had a tonic spasm, became unconscious, and died in a few minutes. The final rupture occurred into the pleural cavity. In a fourth case the external iliac artery was involved. The sac was formed by the skin, subcutaneous tissues, muscles and peritoneum. In two cases the aneurysmal sac underwent suppuration. One was of the innominate artery, the sac projected into the neck to the size of a man's fist; had been growing for three years. The case was published in the American Journal Medical Science, 1877, LXXIII, page 374. In the other case, which has already been mentioned above as the celebrated case of ligation of the innominate artery, the aneurysm was of the subclavian artery.

In many cases the patient died of some lesion either supervening on the aneurysm, or not at all connected with it; not, however, from hemorrhage from the aneurysm. Thus in one case of aneurysm of aortic arch death was from cerebral apoplexy. In a second case aneurysm of ascending aorta, that ruptured into the pericardium, death appeared to be by acute pericarditis. This patient died while beating roll-call.

A third case with aneurysm of aortic arch, which did not rupture, died, it was said, of oedema of lungs. The patient had severe dyspnoea for a long time. In a fourth case, also aneurysm of aortic arch, death was from gangrene of lung apparently in no way connected with the aneurysm.

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Six cases died of pneumonia not connected with aneurysm. These were aneurysms of the aortic arch. In two cases, death was from gastritis not connected with the aneurysm; in one of these the aneurysm was of the splenic artery; in the other of the superficial femoral. In one case aneurysm of the superior mesenteric artery, death was from dysentery. In another case aneurysm of the femoral, death was caused by rupture of the thoracic aorta, (which, however, did not show aneurysmal dilatation, but was only "softened"), into the oesophagus. In another case the woman died of cancer of uterus. The aneurysm was of the aortic arch. In at least 16 cases the cause of death was not stated or was not apparent from the study of the specimen. In 22 cases the heart was enlarged; in 4 cases it was stated that the heart was small; and in 28 cases it was stated or the specimen showed that the heart was of normal size, or at least was not enlarged. Some cases of hypertrophy were due to disease of the heart itself. It is quite true that in many aneurysms, including many of the aortic arch, the heart is not enlarged.

As to the medical treatment of these cases, most of the histories say little or nothing about it. In 10 cases it is stated that rest was prescribed; in 7 low diet; in 3 purgatives were given; in 4, potassium bromide and in 9, potassium iodide; in 1, tincture of iron, and in another, iron, probably also the tincture; in one case each there was given digitalis, ergot, lead acetate, opiates, codein, chloral. Pain which in some cases was severe was more or less controlled by the hypodermic use of morphia.

In the case of aneurysmal varix of the iliac vessel, both ergot and potassium iodide were given for a month when "they had to be stopped;" the reason not stated but probably because of irritability of the stomach. In one case both the bromide and iodide were given. In another case a large aneurysm of aortic arch, the iodide was given for four years, beginning with 5 grain doses and increasing to 15 grains, three times daily. The patient improved much during that time, apparently from the use of the iodide; at the post mortem examination a large mass of laminated clot was found in the sac. In another case of aneursym of aortic arch both the bromide and iodide were given and the patient "improved in every way." In this case there was a history of syphilis. In another case of aneurysm of aortic arch the iodide was given in 15 grain doses 3 times daily but "caused irritability of the stomach and was stopped." In another case of aneurysm of the

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aortic arch the bromide was used but the case was under observation only a few days and the effect of the drug was not stated. In another case of aneurysm of aortic arch the iodide was given and he "improved during the first two weeks." In this case there was a history of syphilis. In another case of aneurysm of aortic arch, where also was a history of syphilis, the iodide was used and the "pain ceased, but with the cessation of treatment, returned; with resumption of treatment the pain again ceased." In a case of aneurysm of the abdominal aorta both the bromide and iodide were given but the patient "became worse." In another case of aneurysm of abdominal aorta the iodide was given in increasing doses; the effect is not stated but the patient died soon afterwards. Inasmuch as in no case was the medical treatment limited to the use of the iodide no conclusion as to the value of the drug can be drawn. But the impression one gets from reading the histories and the histories of similar cases is that the drug is of value and should be used when practicable.

Surgical treatment was limited to a very few cases. Venesection was done in one, an aneurysm of aortic arch; the median cephalic and then the external jugular vein were opened and about a pint of blood taken. The operation which was done because of the "fullness in the head," caused temporary faintness, weakened pulse and dyspnoea; for the latter a laryngotomy was done but the patient died as the air entered the artificial opening.

Compression of the proximate vessel, or proximate part of the affected vessel, was tried in six cases. For the great majority of cases it was unavailable. It was used in a traumatic axillary aneurysm. In a popliteal aneurysm the femoral was compressed and the pulsations controlled. In an aneurysm of the superficial femoral the common femoral was compressed by "a mechanical contrivance, devised for the purpose; interrupted every few minutes by digital pressure; at no time permitting the entrance of blood into the tumor. Pressure was continued for ten hours, after which there was no pulsation and the tumor was smaller." Pulsation did not return, there was no pain, and the sac gave no further trouble.

In an aneurysm of the superficial femoral "compression was tried without success." In an aneurysm of the common iliac compression was made. In the case of aneurysmal varix of the iliac vessels, pressure was applied by means of a weight; this was discontinued and forced flexion tried; afterwards constant manual

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pressure was used; the patient improved sufficiently to be discharged from the hospital.

Coagulating injections were used in two cases. In an aneurysm of the innominate artery that projected into the neck, iron persulphate was used and caused some hardening of the tumor. In an aneurysm of aortic arch, injections of gelatin were made in the axilla every five days and at first seemed to harden the tumor.

The introduction of wire into the aneurysm sac was tried in three cases, in two of which also electrolysis was used. In a large aneurysm of the aortic arch, in which the sac was 7 by 8 inches in diameter, lined with laminated clot except in the center where there was some recent clot and blood, a coil of fine iron wire was found in the recent clot. No history of the case is given.

In a large aneurysm of the aortic arch, Dr. Finney of Johns Hopkins did an electrolysis. Three unsuccessful attempts were made to reach fluid blood with a canular needle four inches long passed directly downward into the tumor where the pulsation seemed strongest. The needle passed only into solid tissue. A fourth insertion near the patient's shoulder with the needle its entire length, was followed by a jet of blood. Ten feet of silver wire were then passed through the tube of the needle and a ten milliampère current from a dry cell battery was applied for one hour. At first this caused a little pain. A notable lessening of pulsation followed; pulse 108. The operation was done July 10th; the punctures unfortunately ulcerated and gave exit to repeated hemorrhages, from one of which he died September 26th. The aneurysm was found to contain much laminated clot and also soft clot, in the latter of which was the coiled wire. This case was published in National Medical Review, March, 1901, page 535, and American Medicine, 1901, I, page 251. In another large aneurysm of aortic arch Dr. Finney did an electrolysis February 1st. The sac ruptured April 29th, and the patient died of repeated hemorrhages May 5th. The aneurysm contained firm white clot and also dark red laminated clot that contained the wire. While it seems likely that the more recent clots were caused by the use of the wire and electrolysis, there is yet room for doubt whether the clot would not have formed without surgical intervention.

Attempts to cure the aneurysm by ligating an artery were made in 7 cases; in 6 the artery was tied on the proximal side of the aneurysm (the Anel operation), in one on the distal side (the

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Brasdor operation), and in one, besides tying on the proximal side, a ligature was also applied to a branch of the distal side (the Wardrop operation). In a traumatic aneurysm of the axillary artery, the subclavian was tied in the third part, but the soldier died six hours afterwards. The case was published in American Jour. Med. Sci., XLVII, page 128. In an aneurysm of the common iliac artery, Prof. Hunter McGuire tied the abdominal aorta, but the patient died 11½ hours afterwards. The case was published in Amer. Jour. Med. Sci., 1868, LVI, page 415.

The celebrated case of ligation of the innominate artery by Dr. Smyth of New Orleans was published in Amer. Med. Times, N. Y., 1864, IX, page 95 and in New Orleans Jour. Med., 1869, XXII, page 464. The rarity of a successful ligation of the innominate seems to warrant a brief statement of the case. The specimen is number 6920 Pathological Series in the Army Medical Museum. For many years it was lost sight of, having been placed in a keg and stored away; finally it came to light but in the meantime it had partly spoiled. I had the pleasure of completing its dissection, which had to be done under fluid. It consists of the head, the neck, the arms and part of the trunk with the heart and lung. The places where the innominate artery, the right common carotid and right vertebral were tied are shown by ligatures loosely tied, and the shrinkage of the vessels. The collateral circulation was established by anastomosis of the subscapular and aortic intercostals. The site of the aneurysm of the subclavian is marked by a mass of paraffine. The patient, age 32, a steward on a vessel that collided with another vessel in February, 1864, was apparently injured in the accident for a pulsating tumor was noticed above the clavicle one month afterwards. Two months later the operation was done by Dr. A. W. Smyth of New Orleans. At that time the patient was unable to lie down or stand erect. The innominate was tied ¼ inch from its bifurcation. Pulsation in the sac ceased at once. The common carotid artery was then tied one inch from its origin. About 48 hours afterwards a slight pulsation was noticed in the arteries at the wrist. The patient could now lie down. For two days he had a burning pain in his right arm. Thirteen days after operation the ligature on the carotid came away and the next day he lost about 16 ounces of blood. Attempts were made to control the hemorrhage, that persisted more or less, by filling the wound with lint and using a paper weight as a compress; then the lint was re-

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moved and small shot substituted, this being covered with lint and the paper weight replaced. The ligature on the innominate was removed. The tumor had rapidly diminished in size and pulsation at the wrist became quite distinct. After occasional slight hemorrhages there was a profuse one July 5th. Lint and paper weight again applied until the 8th when Dr. Smyth tied the vertebral artery just below its entrance into the foramen of the 6th vertebra. Pulsation at the wrist ceased and the arm became cold and oedematous; but the pulsation reappeared in a few days. July 8th the vertebral ligature came way. By September 15th the wound had healed and the tumor had nearly disappeared. The man resumed his occupation. In 1875, nine years after operation, the tumor reappeared and became larger than at first. October 5th, 1874, Dr. Smyth tied the internal mammary artery in the third intercostal space. An abscess formed under the clavicle, discharged several times but each time refilled, and nearly 6 months after the last ligation, the aneurysm ruptured into this abscess and became diffused. The sac was now opened and clots removed but the bleeding vessel could not be secured and the patient died of hemorrhage.

Dr. Edmond Souchon of New Orleans made the necroscopy: The innominate artery was reduced largely to a fibrous cord; the common carotid was occluded to its bifurcation; subclavian occluded to the thyroid axis, from thence to the aneurysmal sac was small; the vertebral artery was a fibrous cord up to the 4th vertebra, beyond which it was pervious but small; internal mammary impervious for some distance. The aneurysmal sac involved the subclavian and beginning of the axillary, and occupied the posterior triangle of the neck, pressing on the trapezius and sternomastoid muscles and causing some atrophy of the clavicle.

In the case of aneurysmal varix of the iliac vessels, the external iliac artery was tied with carbolized catgut, after which the patient had intense pain in the instep, the thigh became cold in front, gangrene appeared in the wound, and he died 22 hours after operation. In an aneurysm of the superficial femoral, the external iliac artery was tied with carbolized catgut, pulsations in the tumor ceased at once, and the tumor gradually became a hard lump. The patient afterwards died of gastritis and the aneurysmal sac was found filled with laminated clot. In an aneurysm of the popliteal artery, the femoral was tied in the upper part of Hunter's canal; the collateral circulation, however, failed to be es-

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tablished and gangrene supervened, necessitating amputation in the thigh. In an aneurysm of the innominate artery, both common carotid and subclavian were tied but hemorrhages occurred from which the patient died about three weeks after operation. The subclavian ligature came away a week before his death, and the carotid ligature was found at the necroscopy lying loose in the wound.

Of the 116 specimens analyzed, 51 or nearly one-half were from soldiers. Of the remainder, the physicians of this District contributed 50.

DISCUSSION.

Col. La Garde (U. S. Army) said that from the exhibit made by Dr. Lamb it would seem that soldiers are particularly prone to aneurysms. It has been so in the past, and from reports of casualties in recent wars it would appear that in future warfare aneurysms will be even more frequent. Present day armaments will cause increased occurrence. Instead of the artery being pushed aside as by the old lead bullet the jacketed bullets of reduced caliber rifles cut or penetrate arteries and subsequently cause sacculated or diffuse aneurysms. An observer of the effects of rifle wounds in the Russo-Japanese war reports that aneurysms in the extremities were very frequent, and that wounds of the cavities produced very often fatal hemorrhage; the vessels traversing the cavities, being unsupported by resistant tissues, when they are injured bleed unhindered with fatal results. In this way death on the field from primary hemorrhage has greatly increased on account of the cutting effects of modern bullets upon blood vessels. Injury to vessels in the limbs causes a momentary spurt of blood which is checked by closures of the narrow bullet channel by muscles, fascia, etc., thus preventing what would have ended in fatal primary hemorrhage. Such cases later are observed to have aneurysm develop at the point of injury. Experiences of this kind were noted at Santiago, in South Africa and later in Manchuria.

Dr. Williams said that the prognosis in aneurysms of the type described by Dr. La Garde, being of traumatic origin, is poor. But pathologists show that the majority of aneurysms of non-traumatic origin are caused by syphilis; that being so, the prophylaxis is in our power; and we know and can apply the remedy. Dr. Williams called attention to the fact that the so-called military aneurysms of Charcot have been studied more particularly of late, and it has been found that the nodular enlargements of the finer cerebral vessels are not true aneurysms, but false aneurysms due to perforation of areas of arteritis.

Dr. Lamb had been interested in the remarks made in discussion, but had nothing to add.

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SOME ELEMENTARY SUGGESTIONS REGARDING PLANS FOR OUR LARGE NAVAL HOSPITALS.*

By Medical Inspector F. S. Nash, U. S. Navy.

A NAVAL HOSPITAL is an establishment for the care of sick and injured officers and men of the Navy and Marine Corps and in periods of calamity for the protection of the public.

While governmental possession of reservations will usually determine the location of Naval Hospitals, they should be so placed that they have an abundance of sunlight and ventilation, immunity from fires, noises, dust, smoke, winds from stagnant waters and factories, and they should be accessible for patients and their friends. These hospitals should be built preferably on a southern elevation of calcareous formation to afford drainage. They should be surrounded by large grounds, overlooking a park or running water, and should be situated one half mile from a railroad and one-eighth of a mile from a street car track.

Since war is the raison d'etre of Naval Hospitals, it is then they are most severely taxed to meet not only the imperative demands of our suffering comrades, but the gushing sentimentality of a carping public and the howling of a mercenary yellow journalism.

It is therefore most desirable that all hospitals in large and easily approached centres should have extensive grounds in which tents or other hastily constructed buildings could be placed and thus greatly enlarge the facilities.

Where space permits, the quarters for the medical officers should be in separate single buildings, so constructed that they could be used for the sick, if necessary.

Although not essential, it is desirable to provide a separate building for nurses and civil employees, another for contagious diseases, and a third for the laundry, mortuary, heating and electric plant and garage. There should be a building for storing inflammables in quantity, which for safety and beauty should be subterranean. The grounds should be turfed and near the hospital adorned with shrubs and fountains and with trees more distantly.

*Read at the 19th Annual Meeting.

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A brilliant writer states that "a good hospital, so far as its construction is concerned, may be summed up in two words, ventilation and sunlight," and although there are many other points to be considered in the ideally constructed hospital, they are far less important than these two great postulates.

Most writers advise that at least four thousand (4,000) cubic feet of air, per head per hour, should be given and as in most localities where we will probably build large hospitals, the air cannot be changed oftener than three or four times an hour without undesirable draughts, we must allow fifteen hundred (1,500) cubic feet for each bed. A hospital bed is six (6) feet, six (6) inches long by three feet(3) wide and should stand fully a foot from the wall.

As there should be ten (10) feet of wall space for each patient, with a ten (10) foot passage down the centre of the ward, between the double rows of beds, we would have 1x6½x5x10=125 superficial area, for each patient, and in a room twelve (12) feet in height, we would have for each bed 1,500 cubic feet. By changing the air in this space three times an hour, we get 4,500 cubic feet per hour for the patient; the amount usually thought to be the minimum limit. Of course, these measurements can be modified to suit special conditions, but a limit of eight (8) feet wall space and thirteen (13) feet in height should in the greater part of our country, only be exceeded from necessity. Of course, where the air is warmed before being introduced, these dimensions can be diminished, until as in the tropics, where a large portion of the ward is open day and night and the building approaches open air conditions, almost any dimensions can be applied.

"The Angel of the Crimea," the late Florence Nightingale, long since determined the fact that wards containing from twenty to thirty beds are the best in size for economy of service and it is now generally accepted that the number should be less rather than more than thirty (30). The ward would therefore be 30÷2=15x10, the wall space for each bed, =150 feet long. Each ward would therefore be 150 feet long 12 feet high and 25 feet broad, which dimensions would give 45,000 cubic feet for thirty patients, thus allowing the requisite 1,500 cubic feet for each patient.

Each ward should contain some rooms for single patients, so that there shall be a proper place for the very ill and dying, for

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the unconscious or delirious, for the noisy and for those recovering from anaesthetics.

There should be a window for each bed, extending from the floor to the ceiling with double sashes, the outer sash should open by a key to any angle. All hospitals should be thoroughly screened.

A ward for thirty patients should contain three baths, four water closets and three wash basins. Some authorities locate these at either end of the ward, and some in the middle in the U shaped building. I should prefer the north side. A very excellent arrangement, however, would be to place them at the south end of the ward and connected with the ward by a ventilated enclosed passage way. This would entirely cut them off from the ward and also serve to protect the sun parlor or porch, which should be at the end of the ward for the use of convalescing patients.

From each floor, there should be a chute to a room near the sterilizer, through which soiled linen could be dropped. In most localities, the long axis of the ward should be run north and south, and thus each room would get the sunlight either in the morning or in the afternoon.

In our tropical possessions, where there is sunlight to burn, it would be better to have regard for the prevailing winds. Up to a recent date, it was not thought advisable to superimpose more than two wards, on account of the septic germs being carried by upward currents of air to the top stories, but improved methods of construction, attention to details, trained nursing and modern asepsis and antisepsis have rendered these considerations unnecessary and in a properly constructed and managed hospital, I believe that we can with perfect safety, pile them up indefinitely and gain by so doing, as we obtain more sunlight, better air, and economy in construction and administration.

When planning a large hospital, the buildings should be placed on three sides of a square, leaving the southern side open for the admission of sunlight and air, and in this case the parallel east and west sides should be at a distance from each other, equal to at least their height; their length should be less than twice the distance between them, to prevent shading the windows facing the court. This court should contain grass, flowers and fountains. In case this U shaped building with its double rows of wards is used, we can place sterilizers, refrigerating plant, brigs.

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padded cells, elevators, stairway, library, kitchens, baths, toilets, laboratories, pharmacy, room for linen, nurses, eye cases, examinations and special treatments (as hydrotherapy, X-ray), operations, reception, staff, records, and executive offices along the north wall and thus reserve the rooms exposed to the sun for the sick. By increasing the length of our wards and piling them on each other and by having a third or fourth parallel wing, the capacity can be indefinitely increased. The various floors of the hospitals can either be used as special wards, or partitioned; it would be necessary for the use of officers, to cut up some of the lower floors into separate rooms, or better, suites of rooms each with bath and toilet.

Each ward and the furniture therein should be so constructed that it could be washed out with a hose, disinfected with formaldehyde, and cleaned by the vacuum method.

The kitchen and dining rooms should be placed on the top floor.

This would require a number of pantries there also. Here should be placed operating, anaesthetizing and recovery rooms, bath rooms and toilets for surgeon and assistants, rooms for the sterilization of dressings, instruments, and towels.

The top of the hospital should be flat and finished for a roof garden, solarium, gymnasium and amusement hall. For large hospitals it will be necessary to have at least two elevators; one for food and general freight and one for passengers. The passenger elevator should be large enough to carry one or two beds and should be designed to carry the beds to the flat top of the hospital and to work automatically with electric buttons.

Around the elevator shaft can be built stairs, and a part of the shaft can be used for pipes.

These shafts and their contents should be fire proof. Fire escapes and porches should be outside of the building. Stand pipes with hose extension and chemical extinguishers should be properly located.

The foundations should be of concrete; they and the basement flooring and walls should be made gas and damp proof.

The building material should be stone, metal, burnt clay or ferro-cement. Great care should be exercised in the construction of chimneys, flues and ventilating ducts, so that they shall not leak. For 40 or 50 feet above the grate, the chimney should be

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made of fire brick clay with an air space around for ventilation, and as a precaution against fire.

No wood work should be used in the construction or furniture and there should be no angles or corners.

The walls, partitions and floors should be made fire proof, dust proof, vermin proof and sound proof. Lockers for pantries, kitchens, linen closets, instruments, medicines and clothes should be made of metal and glass, and as far as practicable of the "knock-down" variety, so that they can be easily moved and cleaned.

From 4,000 cubic feet of air per capita per hour for simple cases to 8,000 cubic feet for infected cases, should be demanded. During a large part of the year a great deal of this will naturally be obtained from windows, doors, etc., but outside of hot climates, every modern Naval Hospital should be fitted with both a plenum and vacuum system of ventilation. In certain locations the plenum should be of larger capacity than the vacuum in order not to draw the foul air from undesirable places into the inhabited rooms.

In contagious wards, operating, anaesthetizing and bath rooms, mortuary, kitchen lockers, lavatories, closets, laboratories, sinks, sterilizers, pharmacy and store rooms, only the vacuum method should be used. It should be so arranged that the air around the basins, and all the odors are carried out at once and not allowed to be disseminated through the building. In other locations, the plenum should exceed the vacuum.

According to the temperature desired, the air could be passed over heaters or coolers, before being introduced into the wards. Transoms over the ward doors and heaters under the windows of the corridors would aid in improving ventilation and heating. To obviate draughts a large number of inlets is better than only one or two. It is essential to have not less than one inlet for every two beds. The outlets need not be so numerous.

Provision should be made to introduce at any time a large quantity of warm air into the operating room. There should be some apparatus easily worked at the top of the operating room to let out the fumes of the anaesthetic, and other obnoxious gases.

Where glass comes in contact with cold air, as in windows and skylights, these should be double sashed. If this is done, it is difficult to have too much window space, even in the coldest climates of our country. In the smaller hospitals, where an in-

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creased supply of air is desired, something can be done by heating flues with gas.

The air introduced should be as pure as we can get practically. It is usually best to take it from a considerable elevation where it is comparatively free from germs.

There are expensive methods of straining, washing, and heating the air, and giving it the necessary moisture before introducing it, which I believe are used in the capitol at Washington.

From motives of economy as well as of comfort, a number of moderate sized hospitals are heated with hot water, but in the larger buildings, where power is necessary, the cost of heating is reduced to a minimum by using the exhaust steam.

When hot water is used, as a good deal of heat will be lost before it reaches the radiators, and there will be leakage through misfitting doors and windows, the boilers, (two smaller boilers are better than one large one) should have a capacity of fifty per cent (50) greater than that necessary to just furnish the quantity for the radiating surfaces.

The radiators should be placed in the parts of the wards most exposed to the prevailing winds and under the windows. Their size depends on the dimensions of the room, the amount of exposed wall area, the quantity of window space in the room, the height of the ceiling and the position of ventilators.

The operating rooms require especially large heating surfaces, as the patient is scantily clad, usually wet and weak and there is danger from shock; and on account of the very large glass exposure.

Although the original cost of heating with water is greater, the subsequent consumption of coal is less, because the water is not needed higher than 190°, and on milder days it is lower, besides at this temperature the air is not "burned" as it is by steam at 212° Fires can be banked at night and the hot water will keep the wards at a sufficiently high temperature, which steam will not do The temperature of hospitals is about 70°; we should have sufficient boiler capacity and radiation to keep this temperature, when the outside air reaches minus twenty (-20). The temperature of the water leaving the boiler should be 190° and returning to the boiler from the radiators 170°, just twenty degrees less.

In our larger buildings, where we must have power, the exhaust steam can be used, when this is not sufficient, some live steam can be added. This method of heating is at almost no cost, and it is extensively used in large buildings.

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The mercury vacuum methods, which I have seen, did not work satisfactorily.

While most of the lighting, power and some of the heating in modern hospitals is done with electricity, we still use gas for both heat and illumination.

All large hospitals should have at least two dynamos, and in addition a connection with the city supply of electricity.

While I cannot go into the details of wiring, I cannot forbear to mention the holophane globes and reflectors, and a recent signal light which hangs within reach of the patient, who by pressing a button lights a blue light over his head, a red light over the door of the room and a third light where the nurse is usually to be found.

The lights can be extinguished by the nurse only at the bedside of the patient.

Slots for electric fans to aid ventilation at a distance must not be forgotten.

The water supply will usually be furnished by the neighboring city, or an artesian well; and if supplied by the city, it would be advisable to filter it. If possible, we should have more than one source of supply, in case of accident. Arrangements must be made for hot, distilled and pure cold water.

Should there be a large tank on the top of the hospital for fire purposes, it could be arranged for a swimming pool.

Garbage can be hauled away, or better can be burned. Sewage can usually be disposed of by the city's system, or by septic tanks; a method used by several of our small cities, and now being considered for some of the larger ones.

Plumbing should be the best, and most modern, it should be exposed, carefully calculated as regards supply and arrangement, and constructed of the best material.

In building a modern hosiptal, not to carefully calculate for pipes, wiring, etc., as regards system and the uniformity thereof, the objects for which they are intended, the needed dimensions, methods of conveyance, and quality of material, is most reprehensible.

Cheap material put together in a cheap manner on cheap plans is never economical.

Finally, I wish to emphasize the fact that the days of the hospital village, which has been so useful, but so expensive in construction and administration, have passed and that it is now advisable to construct hospitals in one block.

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THE NEW TYPE NAVAL HOSPITAL.*

By Surgeon A. W. Dunbar, U. S. Navy.

During the last fifteen years the Medical Department of the Navy has been extensively engaged in the renovation and construction of hospitals in order to keep pace with modern ideas and with the rapid increase in the number of the naval stations and of the personnel, the latter having grown from about 10,500 to over 57,000. This period has seen an increase in the number of hospitals from eight to eighteen and the total capacity from 823 to 2,200 when the present contracts are completed. On July 1 of this year the hospital returns show 1,121 patients in naval hospitals, almost exactly one-half of the total normal bed capacity. In the event of war we cannot hope to enjoy the comparative immunity from serious casualties which characterized the Spanish-American War and it would appear that the hospital facilities are still very inadequate. However, it is not contemplated to have the hospital accommodations maintained on a scale necessary during hostilities but it is obligatory that the service be at least prepared for a rapid expansion in the event of war. Also aside from questions of active service the relative importance of the various naval stations is subject to great change, as witness the probable transfer of the theater of naval activity from the Atlantic to the Pacific and the consequent necessity for a large naval base at the "Key" of the Orient—Hawaii.

It has been partly the recognition of this requirement for expansion of naval hospitals that has led the Bureau of Medicine and Surgery to abandon the former massive block and corridor hospital and adopt the present "Type" or model plan upon which all our temperate and sub-tropical zone hospitals are now building, the idea being to have the nucleus consisting of the administration, subsistence and surgical departments complete and adequate for a much larger institution than is primarily erected.

The initial attempt at modern hospital construction in this service was the naval hospital at the Navy Academy and the

*Read at the 19th Annual Meeting.

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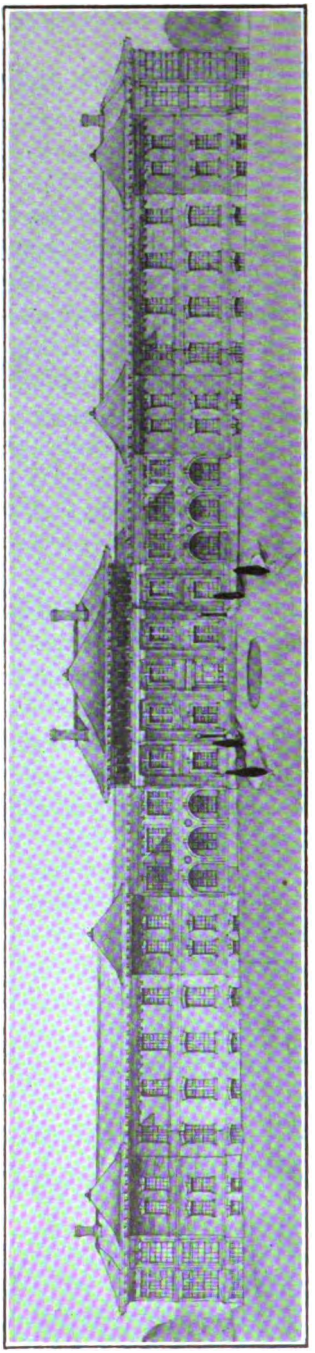

U. S. NAVAL HOSPITAL, NEWPORT, R. I.

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Naval Medical School Hospital. They are similar, both being pavilion hospitals on what may be termed an "H" plan, the administration, operating and subsistence buildings occupying the horizontal central portion with four small, square, one-story 16-bed wards at the ends of the vertical part, all connected by solarium corridors This plan has not been found as susceptible of extension or as convenient of administration as desirable, the corridor area being excessive in comparison with the bed capacity.

The simultaneous building of hospitals at Portsmouth, N. H., Chelsea, (Boston), Mass., Newport, R. I., and the Navy Yard, Puget Sound, Washington, has given the opportunity for carrying into effect the introduction of a uniform plan of construction on lines indicated by the Bureau of Medicine and Surgery which is now regarded as the type upon which new construction will be planned. It combines adaptability for future additions, free exposure of the various parts to the sun and wind, convenience of administration, and economy in construction.

The common plan permits a saving in the preparation of drawings and specifications as well as in building. This is shown in the case of the first three hospitals above mentioned building under one contract at an average cost per bed of $2,107 and per cubic foot of $0.24 as compared with the Annapolis hospital which cost $2,550 per bed and $0.285 per cubic foot and the Medical School Hospital $2,697 and $0.25 respectively.

The type hospital is on a "T" plan the top formed by the administration building and the ward wings, the stem by the subsistence and operating building with the connecting solarium and corridors. The administration building is three stories in height, the others but two stories. A basement is continuous beneath all the buildings and in it under the central main building are three dining rooms with serving rooms for nurses and employees, machinery rooms, dispensary and medical and other storerooms. Beneath the right wing is a recreation room, a library, a well-equipped hydrotherapeutic suite, a mending and sorting room, a bag and hammock room and a serving room with dumbwaiters and speaking tubes to the diet kitchen of the wards above. In the left wing basement at the further end are the autopsy and mortuary rooms completely tiled and drained. Five ordinary and one padded cell with convenient toilet facilities are separated from

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other parts by heavy wire screens. The remaining space here is occupied by an x-ray and a dark room, two rooms with a steam and formaldehyde disinfector between, and a room receiving the soiled linen through a chute from the rooms above, both the rooms and the chute being enameled and the former having an exterior door only to prevent possible infection of the basement. In the basement beneath the subsistence building in the rear are the main kitchen, pantries, storerooms, refrigerating room and a blower and heater room.

The main entrance is at the front of the administration building on the first floor, being approached by broad granite steps on each side of which are ornamental pedestal lights. Double doors with an intervening rubbertired vestibule open upon a corridor leading in the rear to the subsistence building and laterally to the wings. On the front side of the wing corridors are the offices of the medical officer commanding, the record office, executive officer, and officer-of-the-day. In the rear are a board or examination room, an eye, ear and nose room, the laboratory and quarters for the officer on duty. In the center are the main stairway and elevator, and between them an alcove reserved as a reception room.

The entrance for ambulance cases is in the rear of the basement directly into the elevator.

Fifteen rooms on the second and third floors with, as a rule, a toilet between each two, are intended for officers, for whom a dining room on the second and a recreation room on the third are also provided. There is a nurses' and dressing room on both floors.

The subsistence-operating building is 72 feet in the rear of the above with which it is connected by a corridor on the three floors, presenting a hexagonal expansion near the middle, the whole being enclosed in glass forming a delightful solarium. On the first floor is the main mess-room for convalescents, a pantry and a dishwashing room. The operating department is on the second floor, access to which is by the connecting corridor to the main building only. The arrangement of the rooms on this floor varies according to the orientation of the hospital in order to provide a northerly exposure for the main operating rooms. The rooms included under this department are one or two general operating rooms, a general dressing room or minor surgery room, a cysto-

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scopic room, surgeon's dressing and preparation room; nurses' preparation, sterilizing, anaesthetizing and recovery rooms and a surgical storeroom. The natural illumination is by lateral and overhead skylights. Artificial light is provided by recessed electric lights in the ceilng with holophane reflectors, the whole being protected from dust by glass.

The operating, preparation, sterilizing and minor surgery rooms have a floor and a 7-foot wainscot of (grey Tennessee) marble; the other rooms have a 3-inch vitreous tile floor and wainscot. The floors are centrally drained with connections for flushing with hot water.

The wards, four in number, are in the wings and are all similar. At the outer end is a solarium and adjacent to it four quiet rooms. The former is tiled and has a drain for a portable tub. The quiet rooms have double doors and partitions to exclude sound.

The diet kitchen, linen room, toilets and lavatories, the cleaning gear closet and dressing and nurses' rooms are at the entrance to the wards.

The main ward has a normal capacity of 26 beds, which allows 92.2 square feet of floor and 1,244 cubic feet of air space per patient. The wards are well lighted, there being 14.8 square feet of glass per patient.

Forward of the connecting corridor to the administration building is a loggia accessible from the ward.

Provision for additional wards is provided for by leaving space for them in the rear of the present wings to be connected by corridors with them and the main solarium. The building material is dark red brick, with hollow tile partitions, the floors and ceilings reenforced concrete, the whole supported by structural steel framing. The ceilings and walls where not tiled are of Keene's cement finished with a light buff enamel, except in the surgical department, where the finish is white. The floors in the main kitchen, diet kitchen, dressing rooms, mortuary and autopsy room, the general dressing, minor surgery room and toilet are tile. The ward and corridor floors are of yellow pine, closely laid, on cinder concrete to deaden sound. All angles are bull-nosed or coved. The partitions in the toilets, except in the basement, where slate is used, are grey Tennessee marble. The plumbing is of the most sanitary type, the flushometer flush being

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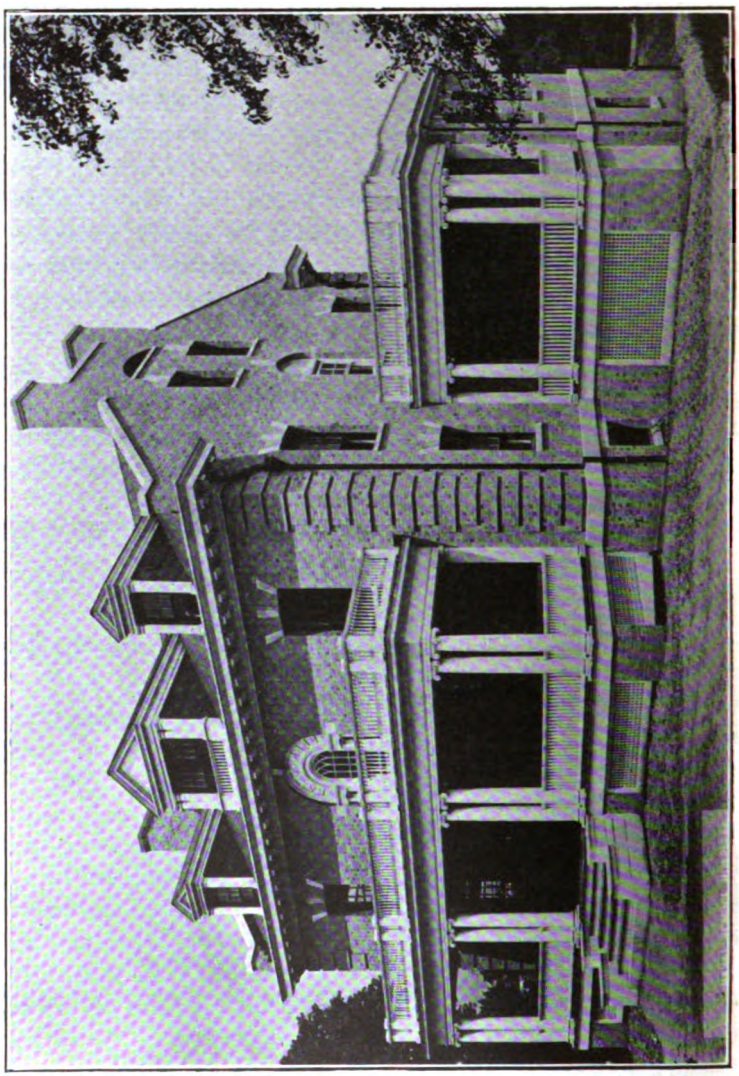

SENIOR MEDICAL OFFICERS' QUARTERS—NAVAL MEDICAL SCHOOL HOSPITAL.

generally used. The slop sinks have a rim flush. Utensil sterilizers are furnished each ward.

All diet kitchens have steam tables, plate warmers, gas or electric ranges, and refrigerators.

The ward furniture is entirely metal.

Ventilation is assured by plenum and exhaust systems. The former consists of two units, one for the administration building

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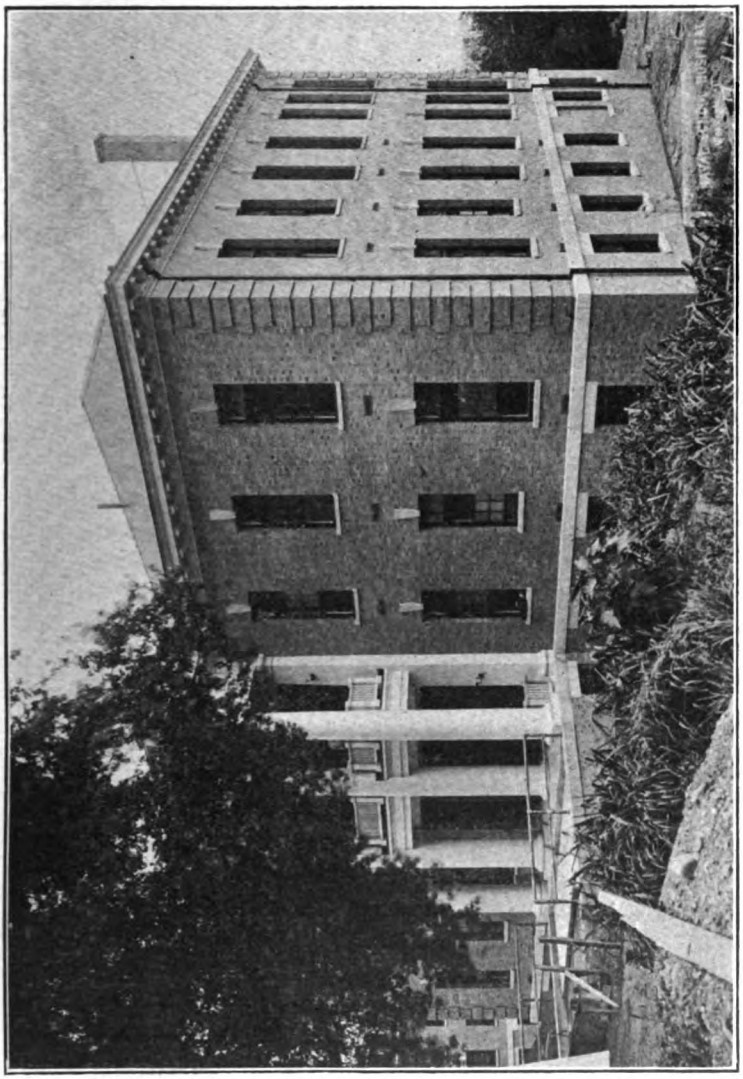

CONTAGIOUS DISEASE HOSPITAL—NAVAL MEDICAL SCHOOL HOSPITAL

and the wards, the other supplying the subsistence and operating building. Each unit consists of a fan driven by an electric motor, having a delivery of 34,000 cubic feet of air in the former and 3,000 cubic feet per hour in the latter. The air is taken from outside, drawn through a fine wire screen, passed through a mechanical water air-washer, tempered to 45° F. in cold weather by passing over steam heating coils and then heated to 75° F. by a

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second set of coils. It then is transmitted through the building in ducts and into the living spaces through registers near the ceiling. The exhaust fans are in the attics connected with registers near the floor. By this system the warmed air enters high up and becomes cool and in settling becomes thoroughly distributed before passing to the exhaust. The supply in the wards is located in the columns near the center of the space and the exhaust being in the outside walls the movement of the air is towards the periphery, thus avoiding chilling drafts from the windows. In addition to the above source of heat both direct and direct-indirect hot water radiation is provided, which is capable of maintaining the inside temperature at 70° F. in zero weather, but is intended to supply loss of heat through walls and windows only. Both of the above heating systems are automatically controlled by thermostats in the living spaces.

The water supply for drinking and culinary purposes is filtered through a Loomis-Manning improved filter, which has a capacity of 100 to 200 gallons per minute.

A vacuum cleaning apparatus located in the basement with outlets on each floor ensures freedom from dust in cleaning.

The complete institution under this plan, in addition to the above, includes a contagious disease building; officers' quarters; male and female nurses' quarters; a power plant; laundry and disinfecting plant; a stable; garage and greenhouse.

The contagious disease building is a basement and two stories high. In the former is the kitchen, serving rooms, two dressing rooms for nurses and one for the civilian employees, the receiving department and disinfecting plant and two dormitories. The dining rooms are entirely isolated from each other, the food being passed through a revolving serving table. The receiving room for pateints is adjacent to the elevator and disinfector.

The two floors above are symetrically arranged for four isolation groups, each consisting of a ten-bed ward, two quiet rooms, diet kitchen, nurses' and dressing room, toilets and lavatory. A portable tub is provided for each unit.

Each unit has a separate stairway to the basement so that communication between the units would require going out of doors.

The system of ventilation and heating is similar to that of the main hospital. The diet elevators are separate for each ward and are hoisted from below to avoid transmission of infection from

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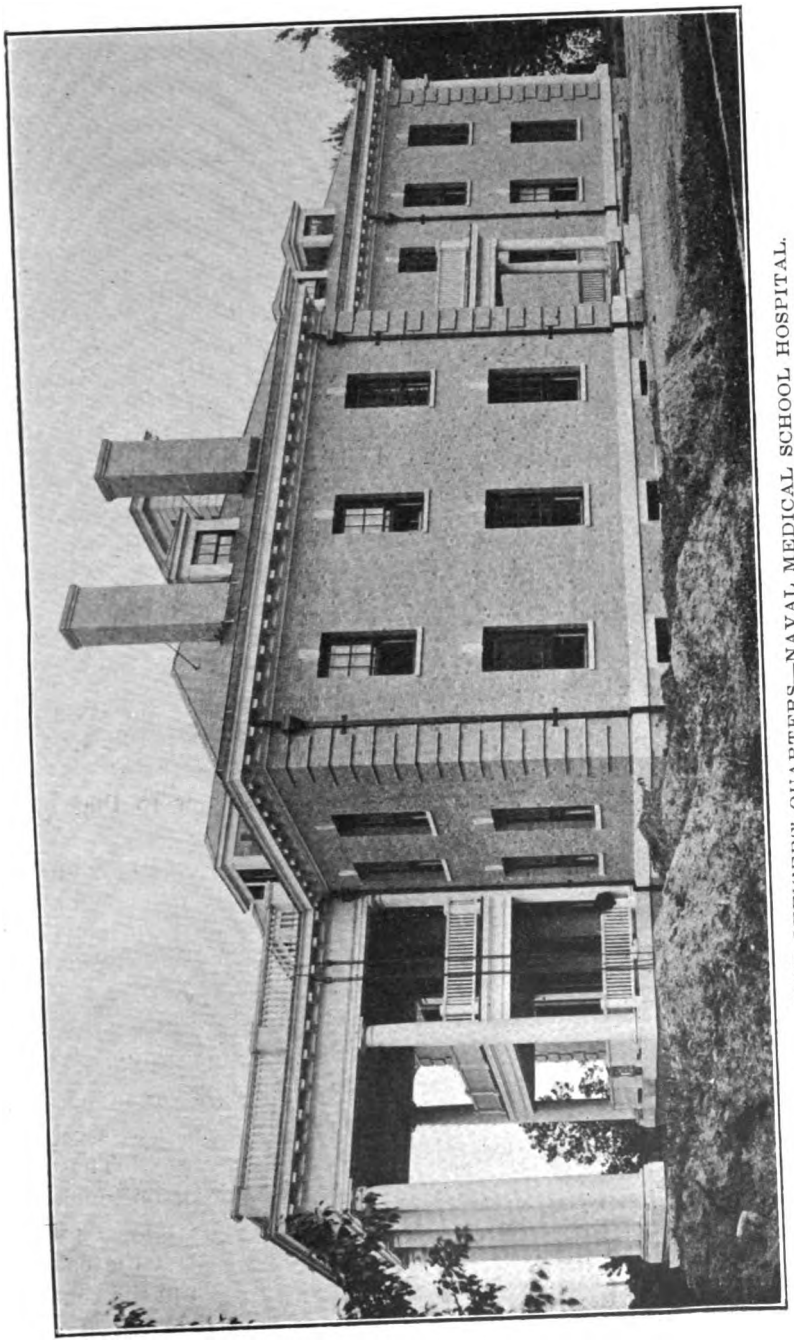

SICK OFFICERS' QUARTERS—NAVAL MEDICAL SCHOOL HOSPITAL.

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above down by means of the rope hoist. Dish and utensil sterilizers are provided for each unit.

The female nurses' home has, in addition to the dormitories, a lecture and recreation rooms, and a suite for the head nurse.

The male nurses' quarters are similarly supplied with a lecture room, recreation and smoking rooms

The power plant supplies electric light and steam for heating and sterilizing purposes to the entire institution. In connection with it is the steam laundry with modern machinery run by electric motors.

The total normal capacity of the hospital, including the contagious disease building, is 180 beds.

The naval hospital at the new training station at North Chicago, Ill., is on the same general plan, but presents some notable variations. The connecting corridors and solaria have been reduced in extent, the wards are square and of less capacity, but it is excelled by none in its completion in detail and equipment. Little or no wood enters into its construction, the floors being tiled throughout. The solaria are located on the south side of the wards instead of at the end, which does not appear desirable, as during the winter months the northern exposure will receive no direct sunlight and the outer end only during the forenoons and afternoons.

The method of ventilation and heating is similar to that of the type hospital.

The "silent" call system for nurses has been introduced into the plans, hereby eliminating the noise of bells and also enabling the head nurse or the officer of the day to detect any tardiness in answering calls.

At each bed either in wards or rooms a push button, accessible to the patient, when pressed illuminates a number in the nurses' call case corresponding to the bed or room, and also a similar one in the head nurse's case. The call is accompanied by the momentary action of a buzzer to attract attention.. In the case of a call coming from a room a red light shows over the doorway. These lights can only be turned out by pressing a resetting button in the wall adjacent to the bed from which sent, thereby making it necessary for a nurse to visit the patient to extinguish the call lights at her station and in the case under observation in the central office. In some civil hospitals a watchman's time detector has been connected with the nurses' call to preserve a permanent

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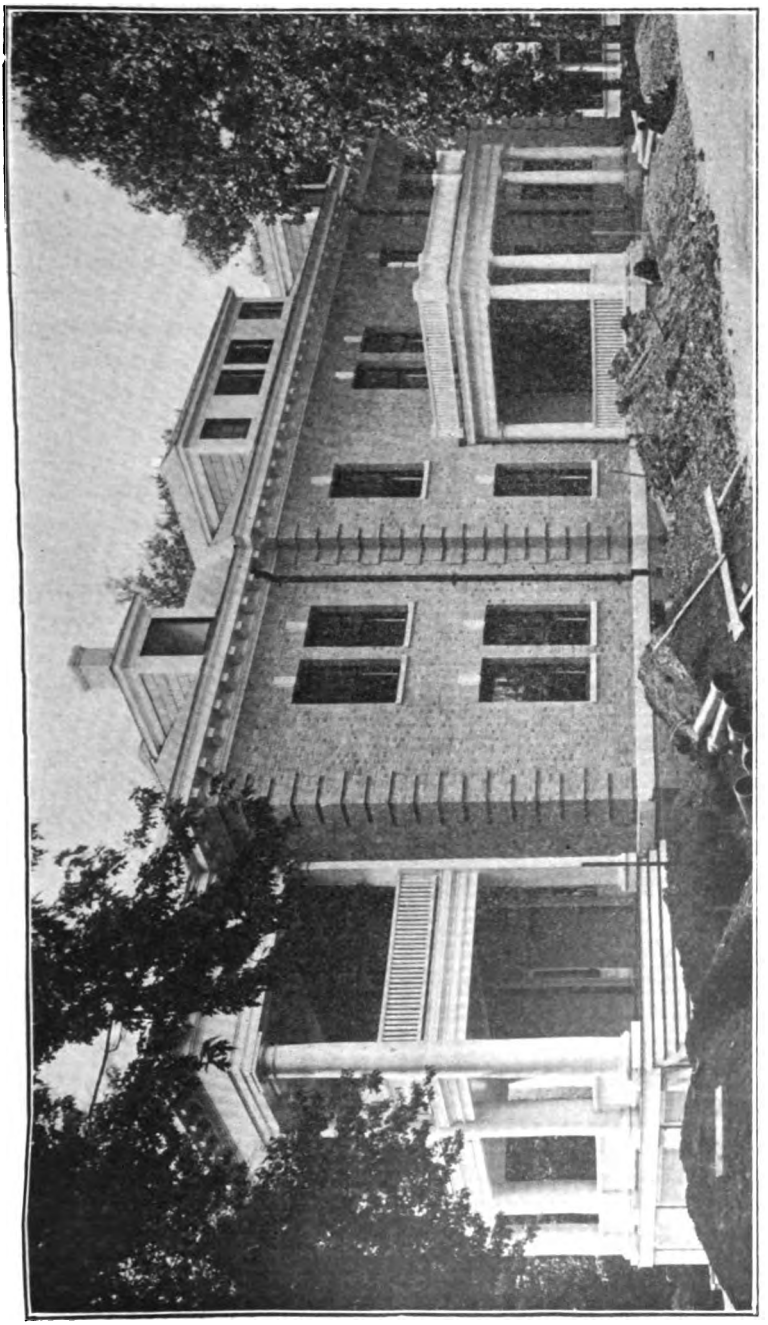

FEMALE NURSES' QUARTERS — NAVAL MEDICAL SCHOOL HOSPITAL

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record of the elapsed time between sending and answering calls—a refinement hardly necessary in naval hospitals. In addition to the nurses' call there is also an emergency call, which can be sent from each nurses' station or private room to the central office to summon assistance.

This hospital is expected to be ready for occupany about March, 1911. It has a capacity of 80 beds for enlisted patients and 9 for officers. The cost of construction has been high, $2,925 as compared with $2,107 per bed in the hospitals building at Portsmouth, Chelsea, and Newport.

In conclusion it is desired to invite attention to the advantageous features of these new hospitals:

(1) The adaptability for further ward extension.

(2) The convenient size of the wards, 26 beds.

(3) The bright wards unshaded by verandas.

(4) The ample solarium space, 34.2 square feet per patient.

(5) The orientation, permitting a southern exposure for the hospital and a northern one for the operating rooms.

(6) The central location of the offices and subsistence rooms.

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THE SANITARY OFFICER.

By Major William W. Reno, Medical Corps, U. S. Army.

THE appearance of the medical officer in military camps of instruction as police officer is very recent.

This advent is the result of well crystallized thought and belief that the disposal of wastes should be supervised and controlled by one whose education and profession make him a specialist on the subject.

To quote from Havard's "Military Hygiene,"—

"Until recent years all sanitary work in our camps was done under the immediate supervision of the Quartermaster Department. Medical Officers were simply permitted to make recommendations which were more or less heeded. There was, therefore, a divided responsibility which bred indifference and prevented the attainment of the best results. It has at last been realized that military hygiene is specialized knowledge and that medical officers alone are fitted to direct and supervise its application. Hence came the present sanitary organization of our camps of instruction whereby the whole business of sanitation, conception and execution, is intrusted to the Medical Department. The Quartermaster Department is simply called upon to furnish the material and hire the necessary civilian laborers."

Ashburn in his "Elements of Military Hygiene" page 99 says,—

"There is a tendency to look upon the matter of camp police as an affair of military discipline rather than of great sanitary importance, and for that reason it is strongly recommended that whenever it is possible a medical officer should be made police officer. He understands better than the line officer the sanitary dangers of the camp, while his interest in having it present a neat and military appearance is quite as great. He is interested more than anyone else in having a small sick report, and he alone, in most instances, finds interest and profit in the study and prevention of vermin and pests; in the disposal of excreta, and in studying the tastes and history of the fly and the mosquito.* * * He should be responsible for sanitary conditions, but he should have with responsibility, a proper authority and proper freedom

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of action. * * * He should be able to carry out his own recommendations under no other control than that of the commanding officer."

There are many other reasons why the medical officer should act as police officer. In order to work with enthusiasm in the disposal of kitchen garbage, manure and human excreta there must be a high impelling force which is over and beyond the published order designating a certain officer as police officer. This high impelling force must be present in the police officer in ample measure or the intimate association with kitchen slops, fecal matter, etc., which his position makes his daily portion, will not be relished keenly.

This high impelling force is the true realization of the grave danger of faulty waste disposal.

The police officer, or as he is now called, the sanitary officer must appreciate the serious responsibilities of his position. He must realize, that to a very large extent the health of the entire command is in his care. He must realize that appearances are deceitful; that a seemingly well policed camp may have in out of the way places water melon rinds, banana and orange peel, whiskey and beer bottles, pieces of bread, bacon and other scraps of food, partially empty meat, milk and tomato cans, decayed fruit and many droppings of manure; also piles of straw and manure under trees; and most of all droppings of human excreta behind bushes, under trees, and in secluded places. Likewise traces of abandoned food stuffs here and there in the kitchen, on the ground, or elsewhere. Or possibly an occasional incinerator lid not flyproof.

He must realize that these sanitary defects are not trivial; that each one may have its own swarm of flies, which in due time will probably crawl over the food of the soldiers and possibly initiate an epidemic camp disease.

The sanitary officer must consider the camp soil as sacred; that soil pollution in a military camp is worse than bullet wounds. He must understand fly borne, mosquito borne, water borne, excreta borne and contact borne diseases and the measures necessary to prevent them.

As can be seen readily the necessary qualifications for the position of sanitary officer are possessed to a pre-eminent degree by the medical officer.

Sanitation of the modern camp of instruction or camp of con-

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centration requires that the duties of the sanitary officer be performed in a manner that is, if possible, beyond criticism. It is keenly realized that slight sanitary faults, if continued, inevitably lead to sickness, and perhaps to epidemic disease.

In order that the sanitary officer can perform his duties with the highest degree of efficiency it is necessary that he be provided with ample authority, personnel and equipment. This is provided for in the sanitary order issued by the commanding general or other officer commanding the camp. The sanitary officer section of this order is of such vital importance that it can spell success or failure in the sanitation of the camp.

A model order of this kind is G. O. 3, Hdqrs. Pine Camp, Jefferson County, New York, dated August 1st. 1910, issued upon recommendation of the camp chief surgeon, Col. John Van R. Hoff.

As the practical working of this order is most efficient and with a minimum of friction, the operation of the sanitary officer created, armed and equipped by it will be discussed in detail.

In accordance with par. 5, S. O. 162, Headquarters Department of the East, Governor's Island, New York City, N. Y., dated July 19th. 1910, the sanitary officer arrived at Pine Camp July 27th, 1910, five days before the arrival of troops.

This necessary arrival in advance of troops gave him ample time to organize the work of his department.

General Orders No. 3, Headquarters Camp of Instruction, Pine Camp, Jefferson Co., N. Y., defines the duties of the sanitary officer as follows:—

"The sanitary officer will be responsible for the removal and disposal of all wastes, and the police of all places for which commanding officers are not responsible. He will manage the large crematories, the dumps, and incinerators, and will make every endeavor to maintain the camp in the best sanitary condition."

With regard to camp police:

"The collected waste will be removed under the direction of the sanitary officer."

As to kitchens:

"The garbage cans will be removed under the direction of the sanitary officer."

For the incinerators G. O. No. 3, states that:

"Men will be detailed from the companies for duty at the incin-

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erators from reveille to tattoo. The sheds, seats and surroundings will be kept thoroughly policed. Seats will be scrubbed with soap and water daily. Toilet paper must be furnished and a light kept in each incinerator at night."

After the camp had been in progress a few days the operation of the incinerators for all militia organizations was turned over to civilian employes and these men placed directly under the supervision and control of the sanitary officer.

As to the night urinals:

"They will be * * * emptied into the incinerators."

It will be noted from these extracts of G. O. No. 3 that the duties of the sanitary officer stated in a few words were the removal and disposal of all wastes, and the police of all places for which commanding officers are not responsible.

In order to perform this extensive duty the following personnel, labor, material and transportation were placed at his disposal.

G. O. No. 3 states:

"Camp sanitary squads consist of details from the Hospital Corps, civilian employes and the garbage contractor, they are under the direction and control of the sanitary officer."

"The sanitary officer will make daily requisition on the Chief Quartermaster for such transportation, labor and material as he may need. When assigned to this service they will not be diverted to other uses except by orders from these headquarters, or unless turned in as no longer needed."

The sanitary officer was thus provided with ample authority, personnel and equipment to perform the work outlined as in his province.

The sanitary officer proceeded to organize his department before the arrival of troops in order that there would be no paralysis of waste disposal at any time, especially during the first few days of camp occupancy. An analysis of the situation disclosed waste disposal to consist of

1. Daily disposal of bath, laundry and other water.
2. Daily disposal of kitchen garbage.
3. Daily disposal of police wastes.
4. Daily disposal of human excreta.
5. Daily disposal of horse manure.
6. The daily police and removal of all wastes from areas for which commanding officers were not responsible.

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As to the special sanitary situation at Pine Camp it was found that kitchen crematories were to be used for garbage and police wastes, and incinerators for the human excreta. The bath and laundry water was to be hauled to the dump. The wastes from areas not covered by commanding officers to be disposed of as the sanitary officer directed. During the camp there would be an average strength of about 5,000 men and 1,800 horses and mules.

A sanitary squard consisting of one Sergeant and seven Privates of the Hospital Corps was at once organized. These men were instructed in the Pine Camp methods of waste disposal and each man given a certain area of the camp to inspect. The duty of each man was to report daily the sanitary condition of every kitchen crematory, garbage can, night urinal, incinerator, bath house and picket line in that area. Also to report completely on faulty method of waste disposal observed.

Each man was given a duplicating note book and pencil.

On the inside of the front covers the following directions were pasted:

"WHAT TO OBSERVE."

Incinerators.—Type? Fly proof? Flies? Odor? Burned out properly? Coke fire used? Coke fire lighted before incinerator fire? Toilet paper? Urine can? Clean? Well policed? Seats scrubbed? Disinfectants used? Out of order? Lighted at night? Night urinals clean? Do men wash hands after using incinerators?

Shower and Laundry?—Water wasted? Pools of water? Flies? Well policed? Out of order?

Kitchen Crematory—Properly built? Garbage, liquid and solid burned thereon? In working order? Well policed?

Garbage Cans—Clean? Over-flowing? Kept in same sites? On stands? Is ground about polluted? Cans leak? Tightly covered?

Refuse.—In cans, on ground? In same place longer than 24 hours?

As a result of these instructions each man knew exactly what was required.

On the first page of each book was pasted the following model of an easy method of noting searching, accurate and complete reports.

This form was to be copied into the book in its proper place

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MODEL.

Date.....1910.

Name of observer:.....Hour began.....

Unit observed.....Hour completed.....

Organizations observed.	Incinerators.	Showers and Laundry.	Kitchen Crematory.	Garbage Cans.	Refuse, including manure.	Use numbers in the squares to refer to note of same number in this column.
Headquarters.....						
Canteen.....						
Band.....						
Off. Mess.....						
Company L.....						
I.....						
K.....						
M.....						
A.....						
B.....						
C.....						
F.....						
E.....						
H.....						
G.....						

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each day before inspection and a note good or bad made as to sanitary condition of every incinerator, shower and laundry, kitchen crematory, garbage can and pile of refuse in the area covered.

The sanitary officer made a daily inspection of at least one incinerator, kitchen crematory, etc., in each area and compared his observations with the report received from the member of the sanitary squad. This gave a careful check on the reports of the sanitary squad and kept the latter on the qui vive.

There was soon added to the sanitary squad, (obtained from the Q. M. D.),

1:—One civilian employe to operate headquarters incinerators.

2:—one carpenter, (later increased to three, for a time and then returned to the Q. M. D.)

3:—one plumber, (later increased to two).

4:—Six civilians employes to operate the incinerators for the National Guard.

5:—One bricklayer (temporarily employed to repair falling brickwork in the McCall Incinerators).

6:—A detail of men to police areas not covered by commanding officers (from the Adjutant General).

A dump was established at a suitable distance from camp. Later a second one was added in order to provide a shorter hauling distance for the troops at the west end of camp.

The dump soon assumed such proportions that a civilian employe was detailed to take charge of it and supervise the unloading of manure and other refuse.

There was but little hauling of refuse in this camp other than manure. All other wastes were destroyed in the incinerators and kitchen crematories, except bath and laundry water. Each regiment would have about ½ wagon load of ashes, burned tin cans, bottles and other unburnable material daily from the incinerators and kitchen crematories.

An arrangement was made with the Q. M. D., whereby one wagon was turned over daily to each Infantry Regiment and three wagons to each Cavalry Regiment for sanitary purposes. Smaller units in proportion. After each wagon had completed its sanitary duty it was available for other purposes. This was an excellent arrangement as it kept the waste disposal under the supervision and control of the sanitary officer and yet each or-

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ganization loaded its own wastes and unloaded them at the dump.

The waste shower and laundry water was not well disposed of throughout the camp. However, it at no time became a sanitary fault. The soap in the water combined with the lime salts and made a scum which settled in the trenches and greatly delayed sub-soil drainage. Numerous small trenches were dug about each large bath house after awhile and aided greatly in the disposal of this waste water.

Many sanitary defects in waste disposal occured daily, most of them through ignorance of proper method, breakage of poor equipment, failure to read orders or pure neglect of duty.

The defects in waste disposal reported by the sanitary squads, unit surgeons, or otherwise were divided into the following classes:

1. Memorandum to the Sanitary Inspector.
2. Information to the Q. M. D. Civil Engineer in charge of the water supply.
3. Work for the plumber.
4. Work for the carpenter.
5. Work for the bricklayer.
6. Instructions to the civilian employes operating the incinerators and the dump.
7. Orders to the detail policing areas not covered by commanding officers.
8. Special work for the sanitary officer.

This information was distributed to the persons concerned at 1 P. M. daily. In the case of the plumber and carpenter a report was made by them daily at 1 P. M. as to the work completed during the preceding 24 hours. Their work consisted of repairing leaks, and breaks in the incinerators, making incinerator and urinal lids fly tight, repairing platforms, etc. The memorandum to the sanitary inspector contained a list of waste disposal defects wherein the troops were responsible and accountable.

As a result of the system herein outlined and its prompt application there was at no time a paralysis of waste disposal that became a menace or of more than slight importance. In the large majority of cases the defects, if correctible by the sanitary officer, were in process of correction before reported by the persons most closely concerned.

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General Order No. 3, the Sanitary Order issued at the beginning of the camp, made this system possible. General Order No. 3 provided ample authority, personnel and material for all things needful in the Sanitary Department. General Order No. 3 insured that the sanitary officer could perform the duties of his office almost without friction. General Order No. 3 appeared as comprehensive and complete at the end of the camp as it did at the begining.

It is believed that G. O. No. 3 makes the sanitary officer an entity and insures that he can perform his entire duty; that is one of the best sanitary orders ever issued in our Army; that it marks a notable advance in camp sanitation.

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REPORT OF VENEREAL DISEASE AT CAMP STOTSENBURG, PAMPANGA, P. I.

By Major William H. Wilson, Medical Corps, U. S. Army.

HAVING noticed several articles on venereal disease published in the Military Surgeon, we would like to add the following report of these diseases at this post since the first of the present year as well as a report of cases of bubo operated upon by different methods showng the loss of time by each method, etc. The idea of using a method of prevention of this class of diseases was determined upon by seeing several articles by medical officers, as well as from the letter from the Surgeon General's Office sent out some time ago.

These diseases made up from 50 to 60% of the total sickness at this post prior to the institution of this method of prevention and was the cause of a very large loss of time to the government.

The total number of cases treated by months, beginning January, 1910, is as follows: January 86; February 55; March 77; April 107; May 92; June 55; July 38; August 30; Setpember 22. The treatment as can be seen by the following letter (appended hereto and marked "A") was begun in March, and in April the commanding officer issued the following order (appended hereto and marked "B") requiring every man exposed to take the treatment or if he developed the disease later he was tried by summary court-martial and punished. The low number of cases in February is due to the fact that that month the troops were out on field maneuvers a greater part of the month, and apparent increase in April is due to the fact that all cases were taken into the hospital from the quarantine list. The large number of cases at this post may be accounted for by its close proximity to two barrios, one particularly made up of people of the lower class of society and containing many prostitutes, some of whom are run out of Manila by the inspection there and find a profitable field near this large military post. A soldier who has been exposed by sexual intercourse comes to the hospital as soon as possible thereafter and is given careful washing of his genitalia with soap and water, urinates, then an injection of 10% solution of Argyrol into the urethra is given which is held in for five minutes, then a

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30% Calomel ointment is applied over the penis thoroughly. This method has proven effective here, I firmly believe, and will stop fully 90% of the cases, most of those that did contract it after taking the treatment were men who did not report promptly, some not until after taking a two hours' horseback drill, which has a tendency to work any virus into crevices in the mucous membrane and so escape the germicidal effect of the treatment.

The only difficulty about this method of treatment is the high price of the Argyrol, but I know of no drug which will take its place in its germicidal effect on the gonococcus and the harmlessness to the mucous membranes, for the former reason its use is stopped as soon as gonococci disappear from the discharge in the treatment of cases. Since recommending this treatment to the commanding officer, I have had his entire support and he has spared no efforts to get men to take the treatment.

As I have said before, all who develop a venereal disease who have not taken the preventive treatment are tried by court martial, they also receive one day's hard fatigue for each day lost on sick report and I believe a further benefit in this direction would come from stopping the pay of the soldier for the time lost by venereal disease, a man's pocket book is next to his stomach and some men prize it more, and it appeals to a good many, however, this cannot be done without the action of Congress, but I should urgently recommend it. I think too that using the preventive treatment at the hospital has the following advantages over giving the man the medicine himself, first, he gets it under the supervision of a man who understands the method, second, he is sober and get the treatment fully and properly, third, many men who would not be sufficiently sober to use it and would throw it away, fourth, it is far more economical as no waste should occur under proper management, fifth, a full and clear record is kept of each case so that accurate results or statistics can be obtained. It has the one disadvantage, that more time elapses between the time of exposure and the hour of receiving treatment, of course, provided that he uses the K packet himself promptly and in a proper manner.

An objection may be made to punishing men for not reporting for the prescribed treatment that they will not come on sick report if disease develops, but this is easily obviated by the regular inspections semi-monthly, or weekly as is thought necessary, and is carried out in this division. In this way cases cannot escape

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detection. Furthermore, all men who are returned to duty from hospital are kept on the quarantine list, that is, they are kept in the garrison proper and report twice daily at the hospital for treatment (injection of zinc sulphate or irrigation by permanganate) and a urethral smear for microscopical examination is taken of these men each Tuesday and when two of these examinations for two consecutive Tuesdays are negative for gonococci and pus cells they are released from quarantine by letter from the Surgeon to the Adjutant.

This treatment seems to be more effective in preventing gonorrhoea than syphilis so far as can be ascertained. Probably because the virus is already absorbed before the application of the calomel ointment.

The following is a brief report of the bubo cases operated upon by the various methods (appended hereto and marked "C").

"A"

OFFICE OF THE SURGEON,
CAMP STOTSENBURG, PAMPANGA, P. I.,
February 8, 1910.

The Adjutant, Camp Stotsenburg, P. I.

SIR: In view of the large number of venereal cases on sick report at this post, about 50% of the entire sick, and the large inefficiency report caused thereby, I have the honor to make the following recommendations:

1st. As a preventive measure, that each man who has been exposed report as early as possible to the hospital, not necessarily on sick report, but privately, to receive the preventive measures which will be given, those who expose themselves in the daytime to report at once after return to barracks and those who expose themselves during the night, to report as soon after reveille as possible. It is important that this preventive measure be taken as soon after intercourse as possible, not later than 12 hours at the outside, to do any good, and every effort should be made on the part of the company officers and noncommissioned officers to aid the surgeons in seeing that this matter is attended to. All men who fail to report for this treatment and later become sick from venereal disease should be tried for disobedience of orders or neglect of duty unless for any reason it can be clearly shown that it was impossible to get the treatment in the first 24 hours after exposure. A reliable and careful man will be placed in charge of this matter at the hospital and a complete record kept so that in two or three months it can be clearly seen if the venereal sick record has been reduced. If this measure is approved by the commanding officer it is recommended that in-

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structions carrying out this recommendation be printed and read at least twice to the men and also posted up in a suitable place and strict compliance enforced.

2nd. Another measure which I believe would have a tendency to reduce the venereal record in the Army, as well as alcoholism, would be to stop the pay of those in the military service while on sick report from a cause not in line of duty or incurred by the man's own misconduct. This, of course, cannot be done here without authority from the War Department, but I believe it would be beneficial in more ways than one to the government if it could be done. A man stays in the hospital from this trouble while the others do his duty.

3rd. All men able for duty are returned to their troop but kept on the quarantine list until no further danger of return of disease or infection remain, anl lists of these men are sent from time to time to your office, and it is earnestly requested that these matters be carefully attended to and that the quarantine be strictly enforced by those in charge of troops, to see that these men do not leave the post on pass or otherwise during this period.. Infraction of this regulation should be severely punished.

Very respectfully,

(Signed) WILLIAM H. WILSON,
Major, Medical Corps, U. S. A., Surgeon.

"B"

CAMP STOTSENBURG, PAMPANGA, P. I.
February 13, 1910.

MEMORANDUM:

The sick in hospital and quarters due to venereal disease among the enlisted men of this command have materially increased recently until they number today: 28 in hospital and 1 in quarters. The total number sick from other causes being 17. Men unfit for duty caused by their immoral habits necessitate other men's performing their duty for them, renders no return to the government, and become an expense instead of a benefit. There is a method by which men who have sexual intercourse with diseased women may prevent themselves from becoming diseased. Men who have had such intercourse can by reporting at the hospital within 12 hours after exposure receive treatment which is simple and in no way harmful. A competent hospital corps man will be placed in charge of this work where the soldiers can report privately and receive the treatment. The soldier need not have his name placed on the sick report. The record will be carefully kept at the hospital. If a man is exposed during the day he should report at the hospital immediately upon his return to the post. If he is exposed at night he should report early the following morning. It is made the duty of troop officers and non-commissioned officers to aid the Surgeon in this work by encouraging

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the men to go to the hospital for preventive treatment, and give them ample time to do so.

This memorandum will be published at retreat today by the 1st Sergeants. All available men will be present. An officer will be present at retreat and take a list of all absentees, which list will be submitted with the morning report on the 15th instant. The Adjutant will take the necessary steps to see that absentees are notified of the contents of this order.

The officer of the day will inform the members of the troop on guard of its contents, submitting a list of the members of the troop with guard report who did not hear the order.

A copy will be posted in each barracks and in the guardhouse. All enlisted men of this command who expose themselves to venereal disease are urgently advised to present themselves as above for treatment. By so doing many will be saved impaired health and the mortification which should be felt upon contracting such a loathsome disease.

By order of MAJOR SCOTT:

(Signed) MATHEW C. SMITH,
Captain & Adjutant, 14th Cavalry,
Adjutant.

"C"

Analytical Report on 75 Bubo Operations Performed at Camp Stotsenburg, Pampanga, P. I., from Feb. 4, 1910, to Aug. 3, 1910.

BY 1ST LIEUT. GARFIELD L. MCKINNEY, MED. CORPS, U. S. A.

The object of this report is a comparison of the relative worth of the ordinary procedures employed in the cure of that common surgical condition in the Army, the bubo. In this series of cases 3 different operations were performed, viz., *Keller's Method: Enucleation of the Glands* entire with partial or complete closure of the wound by suture: *Incision* over the most prominent part of the swelling, removal of the contents and drainage. So far as a fair trial of each of the methods would permit, the operation done in each case was the one most suited to that particular bubo. Thus early and, in the main, nonsuppurating buboes were enucleated; far advanced, suppurating buboes were treated by the third method; while the Keller's operations were made to lap over somewhat into both of these conditions.

Camp Stotsenburg is a Cavalry station, and patients unable to perform mounted duty on leaving the hospital are marked "dismounted duty" until they are able to perform full duty.

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CLASSIFICATION OF THE BUBOES ACCORDING TO THEIR CAUSES:

Gonorrheal:	Chancroidal:	Traumatic:	Syphilitic;	Tropical:	Undetermed:
23	17	17	2	1	15

CLASSIFICATION ACCORDING TO OPERATIVE PROCEDURE EMPLOYED:

Keller's Method:	Enucleation of Glands:	Incision and Drainage:
29	28	18

Average number of days lost in hospital for all cases.....13.35
Average number of days to full duty for all cases.....22.05

AVERAGE NUMBER OF DAYS LOST ACCORDING TO OPERATION:

	Keller's Operation:	Enucleation:	Incision:
To dis. duty.....	12.96	13.8	14.22
To full duty.....	20.4	16.2	28.2

The cases in which enucleation was performed are thus seen to have shown a decided advantage in earlier return to full duty. This is better illustrated in the next table.

PATIENTS GOING FROM HOSPITAL DIRECTLY TO FULL DUTY:

Keller's Operation:	Enucleation:	Incision:
2—7%	12—42.8%	4—22%

OPERATIVE WOUNDS CLOSED PER PRIMAN:

Keller's Operation:	Enucleation:	Incision:
None.	16—57%	2—11%

Following are cases who, without subjective symptoms, showed a slight serous, or sero purulent discharge after return to full duty, sufficient to require subsequent dressings, but not otherwise interfering with their work:

Keller's Operation:	Enucleation:	Incision:
20 cases—71.4%	8 cases—28%	8 cases—44.4%

This discharge continuing after return to full duty usually lasted less than a week; 10 to 15 days in a few cases; and in one instance it has persisted intermittently for four months in spite of radical treatment. Patients operated on by the Keller's method, not only showed a much larger percentage of discharging wounds on return to duty; but were quite regularly less responsive to treatment. Various measures were taken to hasten the healing of these annoying cases, such as the use of powders, antiseptics,

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recuretting and drainage, enlarging the old incision, or making a new one; but as a rule the simplest and most efficacious consisted in merely changing the dressing and letting the wound severely alone. It seems quite probable that some of these cases would have responded well to Biers hyperemic method systematically applied; but not having the suction apparatus on hand a trial of that method had to be omitted. The best results with the Keller operation were obtained in those cases where the wound was thoroughly swabbed out at the time of the operation with tincture of iodine, instead of using hydrogen peroxide.

FOLLOWING ARE THE CASES REQUIRING A SECONDARY OPERATION:

Keller's Operation:	Enucleation:	Incision:
3 cases—10.3%	None	2—11%

Of interest was the behavior of the enucleation cases to the closure of the wound by sutures, and to the use of tincture of iodine in the cavity. As the object was in these cases to get primary healing, considerable pains were taken to secure asepsis so far as it can be had in the average hospital dressing room. In those cases where the wound was closed tightly by sutures after enucleating the glands, there was apparently an unwarrantable tendency to suppuration; and this tendency was in almost direct proportion to the size of the cavity and the imperfection of the hemostasis when the wound was closed. The slightest post operative oozing was apt to result in suppuration. In the latter cases the wound was only partially closed, leaving free drainage, and in most of these cases the cavity was swabbed with tincture of iodine before introducing the sutures. The results are illustrated in the following table:

		Manner of Healing:			
		Per Priman.	By Granulation.		
Wound entirely closed by sutures	10 cases—4	6	40%	66%
Wound partially closed and tinct. iodine used in all but five cases	16 cases—10	6	62.5	37.5
Wound partially closed, tinct. iodine used in all	11 cases—8	3	72.7	27.3
Average			57	43

Conclusions,—so far as any conclusions can be drawn from so limited a number of cases.

1. The Keller operation enables patients to leave the hospital as early, or earlier than by any other method.

2. There is a marked tendency in buboes operated on by this

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method to continue a slight, but annoying discharge after all subjective symptoms have disappeared, coupled with a tendency to form a secondary focus of infection sometime after the operation, which requires surgical relief.

3. Enucleation is the method of choice if patient can be operated on before the glands have undergone many suppurative changes.

4. In cases where the cavity remaining after enucleation is large, and any oozing takes place, the wound is more likely than not to suppurate, if wholly closed by sutures.

5. The best results in enucleation are obtained where the cavity is thoroughly swabbed with tincture of iodine on completion of the operation, and left partially open; wholly open, if the incision is small (less than ¾ of an inch).

6. Suppurating buboes treated by incision and drainage are responsible for the greatest loss of time by the patient.

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CERTAIN FEATURES OF THE HERNIA OPERATION.*

By Major Alexius McGlannan, N. G. Md.

THE general results of the modern operation for inguinal hernia are so good that no reason exists for any marked change in technic or procedure. Here and there, however, several minor improvements have been developed in various steps of the operation, some of which are not well known or understood.

The real difficulty in the cure of hernia came to an end with the demonstration by Bassini and by Halsted of the importance of securing a broad band of union between the divided muscles, as well as a low attachment of the internal oblique to Poupart's ligament.

A study of the recurrent hernias led these observers to believe that the weak point in the earlier operations was the position of the cord, and that this could be overcome by transplantation of the cord. Bassini sutured the internal oblique under the cord, while Halsted brought it out over the external oblique. In addition Halsted excised the veins of the cord in order to make the upper opening as small as possible. Both methods require the removal of the cord from its bed and the necessary traumatism is very likely to interfere with the circulation enough to cause oedema, swelling of the testicles and later atrophy. These after results were especially frequent following the Halsted operation and led to its early modification and subsequent disuse.

Bloodgood (Johns Hopkins Hospital Reports), advised the separation of the cord and the transplantation of veins only, without disturbance of the vas and its vessels. Later study of the end results showed that the transplantation of the cord is unnecessary and in the Johns Hopkins Bulletin, August, 1903, Dr. Halsted describes in detail the present operation for hernia, elaborated by himself and Dr. Bloodgood after a careful study of their cases and those of other operators.

The operation combines the advantages of several others, notably Coley's method of Suture of the Canal without trans-

*Read by title at the 19th Annual Meeting.

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plantation of the Cord. An important point is the utilization of the Cremaster muscle in the closure.

For description we may divide the operation into four stages, namely,—Opening the canal, dealing with the sac and its contents, treatment of the cord, closure of the canal.

Opening the Canal.—This is best done by a skin incision made one inch above and almost parallel with Poupart's ligament, but approaching the ligament as it nears the pubes. This incision is carried down to the aponeurosis of the external oblique. The flaps are dissected back until Poupart's ligament and the external ring are well exposed. Usually a gap in the aponeurosis is seen, extending up over the canal, and showing the thin, widely separated arcuate fibres of the external ring. The aponeurosis is then divided and the flaps reflected, the upper, until the sheath of the rectus is exposed and the lower to show the shelving portion of Poupart's.

The cremaster muscle and fascia are split, not directly over the cord, but a little above it. (Halsted).

The internal oblique is made as mobile as possible. On opening the canal there is found usually a wide gap between the edge of this muscle and Poupart's ligament. One object of the operation is to shorten this space by drawing the muscle down without tension.

The Sac.—In the separation of the sac from the cord the latter is the important structure and is the one to be conserved. When it can be done easily the sac should be dissected free by means of a sharp knife. Rubbing with a gauze sponge, blunt dissection, and other forms of violent separation should not be employed. The veins of the cord, especially the important deferential vessels, are thin walled and easily ruptured or thrombosed. Rupture causes a post-operative haematoma of the cord, and thrombosis gives a chronic passive congestion of the testicle, both ending in atrophy. Moreover the loose areolar tissue of the cord carries the deep lymphatics, and their destruction causes lymphoedema,—chronic inflammation and elephantiasis of the scrotum.

When the sac can not be removed easily, it should be opened and divided at the neck. The upper end should be freed, the lower partially removed, or not disturbed according to the firmness of its adhesion to the cord.

A congenital sac, or an acquired one that has become firmly

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adherent to the cord, will most often require this partial removal. When the sac is so treated, the lower portion must be left unsutured to avoid a hydrocele.

Fat.—The preperitoneal fat may be redundant and require removal. This should be done with great care, after ligation and without traction. Fat protruding into the canal near the pubic bone may be that covering the bladder.

Probably the most common cause of injury to the bladder is undue traction on the fat. A mass of fat, covered by peritoneum that appears after traction on the sac, should be handled most carefully, because it is very likely to be the bladder.

If the bladder is accidently opened, it should be sutured at once, using fine, rapidly absorbed cat-gut in the mucus membrane, and more resistant strands or fine silk in the other coats. If the urine is cloudy, the hernia wound should be drained.

Adhesions in the Sac.—Old irreducible hernias usually contain thickened tough omentum coiled and adherent to the sac. This should be spread out and divided between ligatures and the distal portion removed with the sac.

Adherent bowel should be separated with great care. If the adhesions are dense, it is better to split the sac and leave the adherent portion attached to the gut.

The Appendix.—In right sided hernias we remove the appendix whenever the patient's condition warrants it. If the internal ring is large, the appendix may be removed through the opening, although the removal is usually difficult. If there are many pericecal adhesions, or if the gut is at all friable, we prefer to make a McBurney muscle splitting opening above the ring. When the appendix in the hernial contents, its removal is easy.

Cecal and Sigmoid Hernias.—Here the posterior wall of the sac may be the intestine itself, or the sac may be complete and interpose a layer of peritoneum between the cecum or sigmoid and the remainder of the hernial contents. If the sac is carefully opened at its upper end there is little danger of wounding the bowel. The same is true of bladder hernias. Such sacs usually have a broad base and are of the direct type.

The Cord.—The urgency of gentle manipulation of the cord has been noted. We believe that the best results do not require its transplantation. When the veins are large or varicose, it is best to remove them, taking care not to injure the vas or its veins, and to dissect the veins out of the surrounding areolar tissue.

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Undescended testicle is nearly always due to some anomaly of the cord. This condition is a serious complication of the hernia operation. Rawlings from St. Bartholomew's Hospital, London, (Practitioner, Aug., 1908), recommends removal of the testicle and closure of the canal as the operation of choice. This teaching is contrary to that of most other surgeons, and especially is not borne out by the experience of Americans. We believe that every effort should be made to save the testicle and bring it down into the scrotum. A certain number retract to the external ring or into the groin, but most remain in the scrotum. The method of operating is that described by A. D. Bevan (Jour. A. M. A., Sept. 19, 1903), which includes the excision of the veins and separation of the peritoneum from the cord at the internal ring in order to lengthen the cord.

The Closure.—In uncomplicated cases the sac is transfixed at the neck, tied off and excised. The ligature on the stump is left long, each end is threaded into a needle, carried up under the internal oblique, and brought out on its surface about 1 cm. above its lower border. When these are tied the sac will be inverted and drawn up under the muscle. This principle is taken from Kocher.

The sacs of sigmoid and cecal hernias are treated in a different manner. The large opening is closed by a purse string suture inserted from its inner side. After this suture is tied the surplus sac wall is ligated and excised. The stump is anchored under the muscles as described above.

The Muscle Suture.—We begin the suture at the lower angle. The needle is passed through the conjoined tendon, takes up the cremaster, and then is carried through the shelving portion of Poupart's Ligament. Enough room must be left below this suture to accommodate the cord. The remainder of the edge of the internal oblique is brought down to Poupart's in the same manner, if this can be accomplished without tension. If needed, a relaxation incision can be made in the rectus sheath.

When the conjoined tendon is defective or the opening so large that closure requires tension of the internal oblique, the rectus sheath flap should be used. This valuable contribution of Halsted and Bloodgood is described in the reference already given. The sheath of the rectus is divided by an incision extending from its lower end upward about 3 cm., joining another at right angles, running in from the outer border from 1 to 1.5 cm.

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This flap is turned over and its cut edge sutured to Poupart's ligament. The rectus fibres are drawn out and with the internal oblique are sutured as another layer.

The aponeurosis is sutured by means of an imbricating suture. The lower flap is first drawn up under the upper and fixed, then the edge of the upper flap is sutured down.

In the original operations mattress sutures of silk were used; silver wire and other materials were also used at intervals. Since the introduction of safe methods of sterilizing cat-gut, this absorbable suture has given practically perfect results.

The use of filagree made of fine silver wire is recommended for large hernias. The filagree is placed just over the peritoneum, below the muscles, and the latter are drawn as close as possible over it. The object of this insertion is to give a foundation for the formation of enough firm scar tissue to fill in the defect. I have had no experience with this material.

Transplantation of the sartorius may become necessary to fill in a large defect. The muscle is divided about 10 cm. below the anterior superior spine and turned in to be sutured to the rectus sheath.

The permanent cure of large direct hernias is always difficult. Occasionally it is impossible without castration. This is true especially of cecal and sigmoid varieties. The after treatment should be most careful and the patient observed frequently. If any weakness of the wall appears, an abdominal belt should be worn before actual protrusion occurs.

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REPORT OF SEVERAL CASES TREATED WITH BISMUTH-PASTE.*

By 1st Lieut. A. G. Chittick, Medical Corps, N. G. Ind.

ALTHOUGH we have treated very few cases, as yet, with bismuth-paste, the results have been so striking that, considering the class of patients and the effects of treatment, I believe the subject worth considering.

The use of a paste of bismuth subnitrate and vaseline as a curative agent was first described by Dr. Emil G. Beck, of Chicago. At least his were the first reports to come to my notice. In his report to the Surgical Section of the St. Louis Medical Society, April 24, 1909, he gives the following as his conclusions after two years' work with the treatment,—

"A successful surgical operation for tubercular sinuses or fistulae depends on the exact knowledge of the extent, direction, and number of sinuses before the operation is undertaken.

"Radiographs obtained by previously injecting the sinus with bismuth-paste show distinctly the origin and extent of the sinuses. Such radiographs should be taken before an operation is decided upon.

"Tuberculous sinuses, fistulous tracts, abscess cavities, including empyema, can be cured by the injection of a 33% bismuth-paste and in most cases operations become unnecessary.

"The formation of fistulous tracts may be prevented by opening cold abscesses, evacuating the fluid and immediately injecting a quantity, not exceeding 100 grams, of a 10% bismuth-vaseline paste and not closing the opening.

"When sequestra are present, the injections should be tried for a reasonable time and risky operations should be reserved as a last resort.

Bismuth subnitrate is a bactericidal, chemotactic substance which is slowly eliminated. Injections up to 100 grams of the 33% paste produce no toxic effects. In large doses it may produce symptoms of intoxication.

*The author brings this matter to the attention of his fellow members of the Association in the belief that while the observations chronicled refer to civil practice, the subject is of considerable importance to the military surgeon.

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"While these injections are effective in all suppurative sinuses and cavities, those of tubercular origin respond to the treatment most readily.

"The secretions from the cavities change their character after the injection, becoming seropurulent or serous and the micro-organisms gradually diminish and often disappear. Tubercle bacilli are no exception.

"This method is applicable to the suppurative accessory sinuses of the head.

"The patients regain their general health and gain in weight rapidly, after the sinuses are closed."

It will be seen from the above conclusions of a man who has used the treatment for a long period that it has much to commend it.

The paste spoken of is very simply made and will keep for some time. So far only two or three formulae have been advised. The one generally used consists of 33% bismuth added to 67% vaseline while the latter is boiling. The paste used when a stiffer paste is needed consists of the above to which varying quantities of paraffin are added, usually under 10%. After the preparation of either of these pastes they should be kept sealed if not intended for immediate use.

When we first commenced the use of the paste there were no instruments on the market for the injecting and a common glass syringe was used. The objections to this are readily imagined. The paste had a tendency to get back of the plunger instead of into the sinus, and it was hard to get a stiff paste out of the syringe. Later I secured a 20 c. c. all glass syringe. This worked a great deal better but was very hard to use and no needles were made large enough for the work. Within the last year all metal syringes have been put upon the market. These make the treatment easy and so far I have found only one fault with the one we use. In treating Case 6, described later, it was necessary to use a very small tube and a very stiff paste. I found it impossible to inject this unless I had the entire tube heated in order to keep the paste as warm as the patient could bear it. I have had a water jacket made for this long, eight inch tube and find it quite an advantage. The syringe is as stated, entirely of metal, the plunger being ground to size and the connecting rod is threaded with a quick turning thread. In this way all that is necessary is to fill the syringe, connect with the most suitable silver tip and inject

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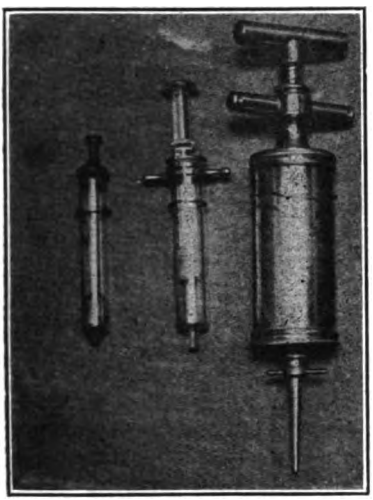
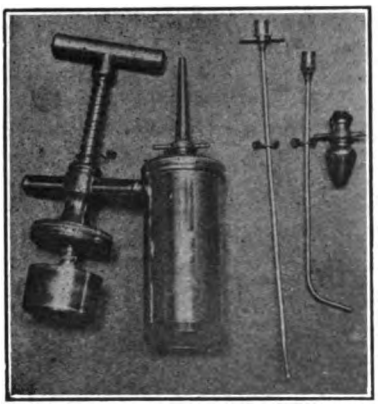
the paste by simply turning the cross arm on the rod connected with the plunger.



SYRINGES ASSEMBLED.



LARGE METAL SYRINGE.

Case No. 1.—Male, aged 26. Fell on ice one and one-half years previous to first examination. Had had a running sore on the elbow for about one year. Various treatments had been tried and resection had been advised after failure to get the wound closed. Loss of 21 pounds in weight and feels very weak. Has been running a temperature of 99.3 to 99.7 for some time. Family history negative. Opthalmo-tuberculin test positive. Injections given once each week. After 9 injections the discharge, which had been considerable, stopped and the wound closed, seemingly healed. However, in less than ten days it had broken open and was discharging an almost clear fluid. A small incision was made and the bone curretted. Several small particles of bone were removed. Treatment was resumed and after 5 injections the wound closed. It has now remained so for 13 months. There are no indications of a return. The elbow is anchylosed but does not hinder him from performing his duties on a farm.

Case No. 2.—Female, 24, suffering from a sinus in the abdomen, in the scar of an operation for the removal of what proved to be a tubercular ovary. After trying for 9 weeks to heal the wound by ordinary means we commenced the injection of paste. Three injections of paste were required. The wound closed fourteen months ago and no trouble has been experienced. She has worked in one of our local stores for the last 8 months and reports having gained 11 pounds in weight and feeling well.

Case No. 3.—Male, aged 47, had been suffering from a psoas

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abscess for two years and five months. Openings, one in right groin just under Pouparts ligament, and one three and one-half inches below the first on the inner portion of right leg. Both openings had been discharging fecal matter for some time. Patient carried a temperature of 101 and had lost over 40 pounds in weight. There being no suitable hospital he was sent to Indianapolis and placed under one of the prominent surgeons. Skiagrams were taken showing ramifications of the disease to such an extent that he was sent home as too advanced to be operated upon. Six injections were given before he took the case into his own hands and quit. I find his reason for so doing lay in the fact that the discharge of fecal matter had stopped. The last injection was given in March, 1909, and he is still alive but not well.

Case No. 4.—Female, 34. Had had a slowly enlarging tumor on the back, at the junction of the dorsal and lumbar vertebrae, for some three or four months. No pain and the only inconvenience is that of being unable to walk erect. The tumor was opened and drained of what proved to be about a quart of tubercular pus. Muro test proved positive. Injections were commenced on May 20, 1910. Four injections were given and the wound healed. She has had no more trouble to date. She has gained fourteen pounds in weight.

Case No. 5.—Male, 25. Served 3 years in the U. S. Field Artillery and 1 year, 7 months in the prison guard. It was while serving in the latter that the abscess developed which later caused the sinus for which he was referred to me for treatment. Had had a discharging sinus for seven months. The opening was one inch to the left and two and one-fourth inches below the left nipple. Upon probing it was found that the sinus extended almost directly upward and seemed to end very near the left shoulder joint. This joint, however, was not affected. He depended almost entirely on the right lung for his supply of air and complained a great deal of shortness of breath. His temperature was only 99.3. Loss of weight reported as 11 pounds No tubercle bacilli in the sputum. Five injections have been given up to this time. He has gained 8½ pounds in weight and the discharge, which was very great, has diminished and changed from a thick creamy pus to an almost clear, odorless discharge

Case No. 6.—Female, 31, first came to the office for consultation in regard to tumor on the left side. Proved to be a tubercular ovary, which was removed. A sinus resulted in the scar. Later developed a second tubercular abscess which was operated. Following the second operation a fistula developed, discharging fecal matter. Treatment begun October 5 and to date 5 injections have been given. As yet no change has been noted other than the fact that the opening in the bowel has seemingly closed. We judge this from the fact that after the first and second in-

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jections the paste appeared in the stools. Since then none has appeared.

Of the six cases treated, I believe then, it is safe to say that three cures have been effected and these without the usual severe operations that are generally necessary.

The following articles have appeared that may interest those who care to look into the subject.

E. G. Beck, Surg. Gyn. & Obs., Aug., '09.
E. G. Beck, International Clinics, Vol. 1, 12 Series.
E. G Beck, International Journal Surg., Feb., '09.
E. G. Beck, N. Y. Med. Journal, Jan. 2, '09.
E. G. Beck, Jour. A. M. A., Jan. 9, '09.
J. C. Beck, Jour. A. M. A., Mch. 14, '08.
F. B. Bogardus, Jour. A. M. A., Feb. 28, '10.

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REPORT OF THE BOARD FOR THE STUDY OF TROPICAL DISEASES IN THE PHILIPPINE ISLANDS, QUARTER ENDING SEPT. 30, 1910.*

By Major Weston P. Chamberlain, Medical Corps, U. S. Army, Captain Horace D. Bloombergh, Medical Corps, U. S. A., and Captain Edwin D. Kilbourne, Medical Corps U. S. A.

[Continued.]

OBSERVATIONS AT HANOI AND HAIPHONG, TONKIN PROVINCE.

TONKIN, a part of the old kingdom of Annam, has an area of 46,000 square miles and a population of 6,431,000, most of the inhabitants being Annamites, a race of Mongolian origin. These people seem much below the Filipinos in the scale of social development if one may judge from their unintelligent countenances, their dirty bodies, their ragged and filthy clothing and the poorly built and dilapidated native habitations. The country for a considerable distance about Hanoi and Haiphong is delta land but little elevated above sea level. The principal crop grown in this region is rice and the land in every direction is ether paddy field or swamp. Further inland in Tonkin and North Annam the country is mountainous, the highest peaks reaching an altitude of 9,000 feet.

Haiphong, with a population of 16,000, is a shipping town, about 15 miles from the sea, on one of the mouths of the Songkoi, or Red River, and was established *de novo* by the French in 1876, as a port for their well-equipped railway which extends for many hundred miles northwest into Yunnan Province. Hanoi, the capital of Tonkin Province, has a population of 103,000 and is distant about 60 miles from Haiphong by rail, being located on one of the mouths of the Red River near the head of the delta. Both places have a considerable white population, almost exclusively French, and are attractive places of residence. These cities are carefully laid out with wide macademized boulevards bordered by rows of shade trees. All the buildings are substantial stone or brick struc-

*Report made to the Surgeon General, U. S. Army.

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tures built in French style. There are pretentious hotels, business blocks, and churches, and the public buildings, especially at Hanoi, are notable architecturally. In each city there is a fine municipal theater, supplied during one-half of the year with a subsidized operatic company. The same kind of substantial and artistic construction was noted in the European sections of the smaller towns such as Quang Yen and Hongay. Both Hanoi and Haiphong have good water supplies and electric light plants and the former has electric street cars.

Climate.—Hanoi is at longitude 105° east and latitude 21° north, being about seven degrees further from the equator than Manila. The range of temperature is much greater than in the Philippine Islands and the thermometer is said to register as low as 46° F. in the cool season. Most rooms are provided with fireplaces and artificial heat is at times needed. The untoward effects of the sun in summer are much more marked than in the Philippines. Sunstrokes are very common and are reported to be frequently fatal. It is the universal custom to wear helmets, usually white, which are very low in the back and on the sides of the head. The use of colored glasses while exposed to the sunlight is strongly recommended and generally practiced. It is considered unsafe to go out wearing a straw hat even in the fall of the year when the heat and sunlight are not at their maximum.

Military Buildings.—The barracks for the French troops at Hanoi, Haiphong and Quang Yen are solidly built two-story buildings of brick or stone with broad arcades all around on both upper and lower stories. The floors in the barracks visited were of concrete or tile. The buildings seem excellently adapted for the tropics. The air space in the barracks at Hanoi appeared ample, probably amounting to 1,000 cubic feet per man, and there was free cross ventilation through large windows and doors. Each squad room had over the door a statement of the number of men it was authorized to hold. The kitchens were some distance from the dormitory with the dining room midway between. The food appeared well prepared. The lavatory facilities were very meagre and the latrines indescribably bad. The latter consisted of round holes, in a cement floor, over which the soldiers could squat. The feces fell into tin cans placed below in a space open at the back and freely admitting light. The floor was extensively soiled with large fecal masses which had missed the holes. No efforts were made to exclude flies. The latrine inspected was situated between

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the kitchen and the barrack and not far distant from this kitchen and the dining room. Here as elsewhere in Hanoi no attempt is made to screen buildings.

The Military Hospital at Hanoi receives patients from all parts of Tonkin and has a capacity of 300 beds. It is situated in extensive well-shaded grounds and consists of many buildings, all built of brick and arcaded as in the case of the barracks. Nearly all of them were two-story pavilions connected by covered corridors. The floors for the most part are of tile. In a separate compound there is a large woman's ward. There are two wards for native (Annamite) soldiers, a large and fairly well fitted hydrotherapeutic establishment, with two swimming pools, and an elaborately equipped X-ray and electro-therapeutic department with all of the apparatus in perfect working order. The floor space and cubic air space per man in the wards appeared very large and was stated to be over 100 cubic meters (more than 3,000 cubic feet). As far as design and construction are concerned these buildings seem far superior to any of our military hospitals in the tropics; as regards equipment of wards, operating rooms and lavatories they are much inferior to our own.

The hospital is provided with water closets and a water carriage system, the sewage being purified within the hospital grounds by a septic tank process followed by treatment in filter beds composed of clinkers. The plant produces practically no disagreeable smell and the effluent is clear and odorless. The tanks are screened to prevent the development of mosquitoes in them.

L'Institut Antirabique et Bacteriologique d'Hanoi.—This institution is located in the grounds of the Military Hospital and is under the direction of Dr. C. Mathis, who has associated with him Dr. M. Leger, director of the "Institut Vaccinogene du Tonkin." These gentlemen are officers in the colonial military service and have, as do all the French officers, a two-year tour of tropical service. The Board is indebted to Drs. Mathis and Leger for numerous reprints and specimens and for many courtesies in exhibiting and explaining the work of the institute. Drs. Mathis and Leger have investigated and reported on many phases of tropical medicine and a few of their results, contrasted with findings in the Philippines, will be considered below.

Intestinal Parasites.—Uncinariasis has been found to be common in the natives of Tonkin and North Annam. They have examined two cover-glass specimens from a single stool from each

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of 1,250 Annamites who were free from diarrhoeal or dysenteric symptoms and have found 50% infected. The percentages of infection did not vary materially in the delta, in the high regions (3,000 to 6,000 feet) and in the intermediate regions, nor was it affected by sex. Children showed a lower rate than adults, only 27%. Other observers in Indo-China have found among the natives percentages running from 30% to 60%. Both *Necator americanus* and the Old World species were found. Some cases showed marked anaemia.

In the Philippines from 50% to 60% of infections have been found in adult males in Bilibid Prison and in Scout organizations.

The Board for the Study of Tropical Diseases found 29% of infections among adult male Igorots at Baguio (elevation 4,770 feet). In the general population the Bureau of Health and the Bureau of Science (at Taytay) have found much lower percentages of hookworm infection, the rate ranging from 10% to 16% and averaging less than 15%. The figures show a much lower rate for women and children than for men.

In this connection it is interesting to note that neither among the Annamites nor among the Filipinos has uncinariasis been found to be as prevalent as it was in a series of southern-bred white recruits in the U. S. Army where Siler found 85% and Chamberlain 67% of infections. These were men who had never been outside the United States and were with few exceptions apparently in perfect health.

Among 1,000 natives in Tonkin Drs. Mathis and Leger found every one infected with some parasite and in the 1,000 subjects there were 2,289 infections divided as follows:

78.4% *Tricocephalus trichuris;*	75.5% *Ascaris lumbricoides;*
51.2% *Uncinaria;*	27.8% *Clonorchis sinensis.*

We know of no series from the Philippines which show such a large percentage of verminous infections as the above.

Infections with the Chinese liver fluke *(Clonorchis sinensis)* has proved to be very common in the delta of Tonkin where 40% of the natives harbor the parasite. In the higher altitudes the infection rate has ranged from 2% to 4%. It is found to be much more prevalent late in life, the infection rate rising progressively from 5.66% for those below 15 years of age to 47.82% for those above 50 years of age. As far as is known *Clonorchis sinensis* has not been reported among the Filipinos. Some cases probably imported, have been found among Chinese in the Philippines.

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Dr. Mathis also found and studied some years ago a new flagellate in the feces of man which he considers to be the same as the parasite recently described in the Philippine Journal of Science by Castellani and Chalmers under the name of *Bodo asiaticus*.

Filariasis.—Drs. Mathis and Leger have examined the blood of 3,122 natives to determine the prevalence and distribution of *Filaria nocturna*. In the whole delta the percentage of filariasis among those examined was 4.96, and rose as high as 9% in Hanoi where it is considered a serious danger. In the high regions (3,000 to 6,000 feet) the infection rate was 1.65% and in the intermediate region 1.46%. All of the embroyos were considered to belong to the species *Filaria bancrofti*. Elephantiasis, however, is not common in Tonkin.

In the Philippines the examination of 6,484 natives reported on by this Board showed an average incidence of filarial infection of 2%, less than half the rate in Tonkin. The frequency of infection varied greatly in different sections, reaching 10% in the southern tip of Luzon (Ambos Camarines, Albay and Sorsogon Provinces). It was 4% among Tagalogs in Manila. In northern Luzon it averaged about 0.5% and in the mountains of Baguio (elevation 4,770 feet) no case was found.

Malaria.—In Tonkin the delta, although flat and swampy, is quite free from malaria, except for certain limited foci, while the higher regions are very malarious. Drs. Mathis and Leger have examined the blood of a large number of apparently healthy children and have found the endemic index of malaria for the whole of Tonkin to be 7.33%, a figure much lower than has been observed in other French colonies. This index varies widely in different parts of the Province, ranging from 2.98% to 40.0%. In Hanoi malaria is contracted rarely, if ever. Most of the year mosquitoes are not numerous. Three species of *Anophelinae* are found in the city, *Myzomyia rossi, Nyssorhynchus punctulatus* and *Myzorhynchus pseudopictus* Houses are not screened but bed nets are in general use.

Dysentery.—No bacillary dysentery has been found in Tonkin though frequently searched for. This is an interesting contrast to the Philippines where the disease is probably endemic and is often epidemic. The French suffer severely from amoebic dysentery and from resulting liver abscesses. A large number of patients were undergoing treatment for dysentery at the time of our visit to Hanoi. It was stated that both ipecac and salines had

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been found inefficient and the physician in charge at the time of our visit relied on chloroform water, using it by mouth and for irrigation. Sprue has not been found to occur in Tonkin.

Typhoid fever occurs in Tonkin among the natives with about the same frequency as among Europeans in Europe.

Rabies.—Hydrophobia is apparently much more often seen in Indo-China than it is in the Philippines, where but few cases (about 20) have been reported in the last twelve years. In fact the existence of the disease in the islands was disputed till very recently, when the Negri bodies were demonstrated by Major E. R. Whitmore. In Indo-China with a population about three times that of the Philippines there are two antirabic institutes, one at Saigon and one at Hanoi. Approximately 300 patients a year pass through the latter and it was stated that there were about 25 deaths a year from rabies in the province. The material for establishing antirabic treatment at the Bureau of Science in Manila has recently been brought to Manila from Saigon by Major Whitmore, who has been on duty with the Bureau.

Relapsing Fever.—Relapsing fever, which has not been found in the Philippines except as an occasional importation, is common in Tonkin, having been epidemic during the last four years. It has given an unusually high death rate varying from 27% in 1908 to 42% in 1907. In 1909 the disease was less severe and less prevalent. In Tonkin the malady has been confined to the delta and a few moderately elevated regions. Monkeys could be easily infected by subcutaneous or intraperitoneal inoculation but attempts made at the Bacteriological Institute to convey infection by the bites of lice *(Pediculus capitis* and *Pediculus vestimenti)* and by bed bugs *(Acanthia rotundata)* were unsuccessful.

Parasites Infecting Wild and Domestic Animals.—Drs. Mathis and Leger have reported extensively on a large number of observations which have been made on the parasitic infections of animals and they furnished the Board with many specimens of the organisms. A leucocytozoon has been found in the blood of 50% of the domestic chickens and an allied organism in the turtle dove, the partridge, the teal duck, the sparrow and the peacock. In the chicken they have also found a new fluke, belonging to the family of *Fasciolidae* and inhabiting the conjunctival sac. In the blood of the sparrow they have demonstrated a micro-filaria and a trypanosome in addition to the leucocytozoon previously referred to. The trypanosomes of fish, birds, frogs, toads and serpents

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as well as horses and buffalo have received attention. Microfilaria in the stork and quail, hemoproteus in birds and spirochetes in the leech have been studied. In the blood smears from many monkeys there are found great number of hematozoa, resembling the malarial parasites. In the Philippines monkeys have been examined by Dr. Teague of the Bureau of Science and by this Board without finding a hematozoon and as far as is known it has never been detected in these islands. Major Whitmore states that he has examined the blood of doves, snipe and ducks in the Philippines without finding a leucocytozoon. Comparativly little has been done here along these lines and the field is a broad and interesting one for some enthusiastic investigator to enter.

Beriberi.—Dr. Rangé, the health officer at Hanoi, stated that there was much beriberi in the province but none in the jails and hospitals where they use a rice prepared by hand as needed. A sample of this rice was furnished the Board through the courtesy of Dr. Rangé and it was found that nearly the whole of the pericarp was adherent to the grain. Among persons unused to it such a grain would probably cause intestinal disturbances. Some of the French physicians seem to adhere to infection as the cause of beriberi. They admitted that a diet of polished rice probably predisposed to beriberi but maintain that it acts only in the direction of rendering the system more susceptible to the attacks of the specific parasite. In 1908, Noc in Cochin-China sought to establish a relationship between beriberi and infections with *Necator americanus*. In a large number of beriberi cases he found nearly all to be hookworm carriers. In a group where beriberi was rife he found 64% with uncinariasis; where the malady was sporadic he found 45% infected and where the disease was very rare only 18% harbored hookworms. Mathis and Leger could not confirm these results in Tonkin where they found a nearly equal percentage of uncinariasis among patients with beriberi and among those free from the disease. Even in Noc's group where beriberi was rife the infection with hookworms was not as high as among our southern recruits where beriberi is unknown. It would seem as if uncinariasis could have no bearing on beriberi except perhaps in the direction of rendering a man slightly more susceptible by lowering his vitality.

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ROUTINE WORK ON TYPHOID.

The routine work of the Board for the quarter is shown in the following table:

	Widal examinations.	Cultures from stools.	Cultures from urine.	Cultures from blood.	Cultures from bile.
Positive	*10	0	0	†2	0
Negative	30	35	10	11	0
Total	40	35	10	13	0

*Two reexaminations. † Both fresh specimens.

The 40 Widals were made in the blood of 33 individuals of which 8 (all Americans) were positive. One of the positive reactions was from the blood of a medical officer, not sick at the time but who had had typhoid 12 years ago. In considering the infrequency of positive results in blood, stool and urine cultures it should be remembered that most of these specimens reach the Board several days, and in some cases weeks, after collection. Also that the stool and urine specimens are collected only during convalescence.

EPIDEMIC OF TYPHOID FEVER AMONG NATIVES AT SAN FERNANDO, UNION, P. I.

Information having reached the Board that an epidemic of fever, probably typhoid, was prevailing at San Fernando, Union, P. I., it was decided that a member (Bloombergh) should visit the town for the purpose of studying the epidemic.

San Fernando lies on the seacoast and has a population of about 16,000. In 1909 an epidemic of dysentery prevailed in the town and in August of that year there were 41 deaths from this disease out of a total of 82. During the same month there were no deaths reported from typhoid and cholera and, among other causes of death, there were recorded twelve deaths from intermittent fever, one from meningitis and four from diarrhoea.

In 1908 cholera visited the town. In the month of July, out of a total of 307 deaths, there were 170 from this disease alone. At the same time there were 34 deaths from intermittent fever, 24

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dysentery, 9 from meningitis and 2 from diarrhoea. *No record is made of typhoid.* It seems likely in view of our findings that some of the deaths recorded intermittent fever may have been caused by typhoid.

Our observations were made over the period from July 23rd, 1910, to July 29th, 1910. The disease had been so widespread and the funerals so numerous as to cause general comment in the town although it was conceded that at the time of the investigation the epidemic was practically at an end. This, together with the fact that the Filipino naturally conceals disease, made it difficult to obtain suitable cases for investigation.

Statistics of any value are difficult or impossible to obtain in a Filipino town. The most reliable are probably those of the American school teacher, whose acquaintance with the disease is more than superficial since she had brought certain of her pupils into her own quarters and nursed them. She gives the following figures:

Total average enrollment, June 13th to July 27th.....	392
Total number absent with fever.....	22
Pupils now sick with fever, (July 27th, 1910).....	5
Died from fever 35 days after leaving school.....	1

The native doctor said that the mortality was 50%. The intelligent priest said that there was much sickness but few funerals.

The fever under investigation is said to have prevailed most extensively in the Ilocano district, a stretch of nipa shacks, averaging five deep, along the shore. Here about 1,000 people were living. It was said that almost every house had been visited by the disease. While the disease was most widespread in the Ilocano district it was also present in the main part of town and in the two principal barrios.

Laboratory Findings.—Smears and drops of blood were taken from all cases who admitted having had fever during the preceding three months. Although these people evade investigation and, as was subsequently discovered, in certain instances, denied the presence of disease where it really had existed, yet 23 specimens were obtained in the town proper. Of these two were evidently cases of dysentery. Of the 21 remaining specimens, 18 gave positive Widal reactions and three were negative. In addition one of the positive cases also agglutinated *Bacillus paratyphosus "B"* while all gave negative reactions to *Bacillus paratyphosus "A"*

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A second visit to the first shack in the Ilocano district where four specimens giving positive Widals were obtained, brought forth the information that, of the eleven original inhabitants, two children had died recently of fever and that eight others of the family had been sick at about the same time, the mother alone escaping. Of these eight persons five gave positive Widals, two were negative and one could not be brought under observation. One of the negative cases, which was presented as still ill appeared to be an apparently healthy and active child in whose stools round worm eggs, three or five to the field of the high power, were found. Culture from the stool failed to give *Bacillus typhosus* and it remains in doubt whether he had had typhoid or not.

Of the five school children reported sick only two could be brought under observation. One had been sick only one day. No organism was isolated on blood or stool culture and no Widal was obtained. No subsequent specimen could be obtained. The second case was probably at the end of the third week and while his Widal was at that time negative, the *Bacillus typhosus* was isolated from his stool. A specimen of blood obtained later, about the 7th week, gave a positive Widal in 1-50 dilution.

A second culture of *Bacillus typhosus* was obtained from a stool specimen that was forwarded to Manila. This specimen came from a ten-year-old school girl who was not under observation while the study was being conducted at San Fernando. The history obtained from her school teacher shows that she was sick 26 days with fever and that her sister had died of the same sickness about the time the former was taken ill.

Both of the cultures obtained at San Fernando were permanent acid producers in milk and we may remark in passing that so far no member of the present Board has met with the strain producing alkali in milk which was by some supposed to be the prevalent strain in the Philippines.

Seven cases of apparently healthy men from the Barrio of Caligtan were negative and six cases from the southern barrio of the town likewise failed to give the serum reaction.

Altogether 42 stained blood smears were examined and no cases of latent malaria were discovered. This is of interest in relation to the large number of reported deaths from intermittent fever in the town mortality records and suggest that typhoid

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fever may have been a common cause of death in San Fernando in the past and been reported as intermittent fever.

One blood culture was made from a native on the first day of a fever and was negative for typhoid. The Widal was also negative. The subsequent history of this case is unknown.

Summary and Conclusion.—Out of 42 typhoid agglutination tests done on the blood of natives at San Fernando 20 were positive and 22 negative. Of the 22 negative cases 2 were clinically dysentery and 13 were apparently healthy men.

Of 4 cultures from stools, 2 were positive for *Bacillus typhosus* and 2 negative.

One culture from the blood was negative.

Of 42 blood smears all were negative for malarial parasites.

In view of the high percentage of positive laboratory findings among those examined the Board is of the opinion that an extensive epidemic of typhoid fever had prevailed among the natives at San Fernando and was abating at the time of our visit.

Prevalence of Typhoid Fever in the Philippines.—Typhoid fever occurs with considerable frequency among the white troops in the Islands, the reports of the Surgeon General of the Army for the last two years (covering calendar years, 1907 and 1908) showing the incidence of the disease to be practically the same in the United States and in the Philippines. Within the last fiscal year there has been an extensive epidemic at Parang, Mindanao, 78 cases having occurred in a single regiment. During an investigation of that epidemic by this Board agglutination tests were made upon the blood of 84 residents of the town of Parang with the following results:

Race.	Number examined.	Widal positive.	Widal negative.	Sick.
Chinese	8	1	7	0
Japanese	10	6	4	4
Moros	12	1	11	0
Hindoos	1	0	1	0
Filipinos	53	5	48	1
Total	84	13	71	5

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The five reported sick were clinically typhoid while two others giving positive reactions, of whom one was a Filipino, had slight fever but no symptoms of the disease.

During our routine typhoid work for the past two years ending September 30th, 1910, the Board has examined the blood of 41 Filipinos who were suffering from some febrile disease considered by the attending physician to be possibly typhoid. Most of these were Scouts but a few were wives and children of Scouts or servants of officers. Of the 41 examinations 21 gave positive agglutinations with *Bacillus typhosus*. These figures do not include any of the examinations made at San Fernando and at Parang, which are referred to above.

Nichols in 1908 called attention to the frequent occurrence of typhoid fever among the Filipinos in the Visayas. Bruns about the same time stated that, in his opinion, typhoid was endemic in Iloilo. Nichols also found typhoid among the natives in Taytay in Luzon. La Garde and Jackson have both expressed the opinion that the frequency of typhoid among the natives is not sufficiently appreciated. Many medical officers have told us that they consider typhoid fever among the Filipinos to be by no means unusual.

In view of our own findings and the above expression of opinion it is of interest to note the recently published words of Dr. Victor G. Heiser, Director of Health of the Philippine Islands. He says "While cases of typhoid fever are undoubtedly contracted in the Philippines, yet the disease can hardly be said to be prevalent here." The mortality records in Manila show comparatively few deaths from typhoid. This may be in part due to the water supply and in part to failure in diagnosis. The Board is of the opinion that the application of accurate diagnostic methods to the mass of the natives, will show that typhoid is common in the Philippines at large as it has been found to be in India, in parts of Indo-China and elsewhere in the tropical world.

WIDAL REACTIONS PERFORMED WITH BLOOD OF HEALTHY FILIPINO SCOUTS.

In connection with our work at San Fernando we tried the agglutination test on the dried blood from 102 healthy native Scouts to determine if the normal Filipino's blood tended to

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agglutinate the typhoid bacillus or if any showed the effects of recent typhoid. The details are shown in the table below:

Station.	Island.	Race or Tribe.	Widal, dilution about 1-20.		Widal, dilution about 1-50.	
			Positive.	Negative.	Positive.	Negative.
Camp Wilhelm..	Leyte.....	Visayan ..	.....	12	0	.....
Camp James....	Leyte.....	Visayan ..	.....	12	0	.....
Cotabato	Mindanao.	Ilocano...	.....	12	0	.....
Camp Wallace..	Luzon	Visayan ..	.....	12	0	.....
Regan Barracks	Luzon	Ilocano...	2	10	0	2
Camp Connell...	Samar....	Visayan ..	2	10	0	2
Isabela	Basilan...	Moro	.....	12	0	.....
Bojelebung	Basilan...	Moro	.....	6	0	.....
Camp Bumpus..	Leyte.....	Visayan ..	1	11	0	1
Total	.....	.....	5	97	0	5

It will be observed that 5 cases reacted in the low dilution of 1-20. Only these were tried in the dilution of 1-50 (the strength we ordinarily use in our routine work) and all were negative. The time of observation was one hour. The five which reacted in the low dilution may have been showing the effect of an antecedent typhoid attack but if so it cannot be determined since it is impossible to obtain any reliable history as to fever from these people.

During the work at San Fernando we are indebted for many courtesies to Major U. G. Worrilow, P. S., the Commanding Officer at Camp Wallace, Union, P. I., and to Lieut. G. D. Heath, Jr., Medical Corps, the Surgeon, and also to the Bureau of Health for permission to investigate conditions in the town.

PRELIMINARY REPORT ON ARNETH'S NUCLEAR CLASSIFICATION OF THE NEUTROPHILES AS AFFECTED BY TROPICAL RESIDENCE.

A classification of polymorphonuclear neutrophiles based on the number of nuclei or nuclear fragments was proposed by Arneth in 1909. He described five main classes. Class I has a single nucleus which may be round or of irregular shape. If the nucleus is round the cell is then identical with Ehrlich's neutrophilic myelocyte which is not found normally in the circulation. Class II includes the neutrophiles with two nuclei or nuclear fragments.

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Class III has three nuclei or fragments and is the largest class in normal blood. Classes IV and V have, respectively, 4 and 5 nuclei or nuclear fragments. A fairly constant proportion between the different classes is found in normal blood. The "neutrophilic blood picture" as given by Arneth is for each 100 polymorphonuclear leucocytes as follows:

Class,	I	II	III	IV	V.
	5	35	41	17	2

Simon gives the following normal range for each 100 neutrophiles:

Class,	I	II	III	IV	V.
	4-9	21-47	33-48	9-23	2-4

The polymorphonuclear leucocyte is the active phagocytic cell of the blood stream and the corpuscles with three or four nuclear fragments are considered the adults and are thought to be most active as phagocytes and best fitted to protect the body against invading organisms. The superannuated cells represented by Class V and the immature cells represented by Classes I and II are less able to take up the defense of the body. Pottenger in a series of experiments found a gradual rise in phagocytic power from Class I to Class IV, inclusive, and a decrease in Class V.

When the first and second classes are increased above normal and the third and fourth are correspondingly decreased the condition is spoken of as a "shift to the left" while the reverse alteration is called a "shift to the right." Both Pottenger and Kagan found a decided shift to the left in patients with marked lesions of tuberculosis and the latter found a less marked shift to the left in cases of sepsis.

The reduction below normal in the percentage of polymorphonuclear leucocytes which has been found by this Board and by others in the blood of both natives of the Philippines and Americans who have resided for some time in the Islands was discussed in our last quarterly report. It appears possible that this reduction in the relative number of phagocytic neutrophiles may indicate a lowering of resistance to certain infections. To further study this aspect of the matter the Board has made an examination of the blood of ten healthy adult white men and twenty-one healthy adult Filipinos, recording both the differential count and

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the nuclear classification of Arneth. The average results as compared with several writers' estimates of the normal are shown in the following table:

	Polynuc. Per Cent.	Eosins. Per Cent.	Small Lymph. Per Cent.	Large Lymph. Per Cent.	Mast Cells. Per Cent.	Arneth's Classification.				
						I. Per Cent.	II. Per Cent.	III. Per Cent.	IV. Per Cent.	V. Per Cent.
Normal (Simon).....	60–70	1–4	20–30	1–6	.2–1.	4–9	21–47	33–48	9–23	2–4
Normal in Europe (Arneth).....	.....	.....	.....	.....	.....	5	35	41	17	2
Normal in America (Kagan).....	.....	.....	.....	.....	.....	5	19	49	25	5
Average for ten healthy Americans in P. I.....	55.8	4.9	28.7	9.6	1.0	12.0	34.5	38.3	13.0	2.2
Average for 21 healthy Filipinos.....	48.1	13.6	28.1	9.4	0.8	28.1	41.1	24.7	5.3	0.8

It will be seen that there is a slight average movement to the left in the group of Americans. Of the ten men three showed marked and two slight shifts to the left. The remaining five were normal. They were soldiers who had been in the islands for periods ranging from 4 to 22 months, the average being ten months. There is a moderate fall below the normal in the polynuclears and the percentage of small lymphocytes is high, though not above the normal limits, and is about the same as it has been found to be in other larger series where the length of tropical service was the same.

Turning to the figures for the Filipinos there is seen to be a marked shift to the left in the average of the Arneth findings and when considered individually there was found to be only one out of the twenty-one which gave a normal neutrophilic blood picture. Four others gave a moderate shift to the left and the remaining 16 showed a very marked movement in that direction. The average differential count for these same men showed the usual changes found by ourselves and others in the native blood, viz., a marked polymorphonuclear decrease, a high eosinophilia, and a high small lymphocyte count, though the latter was not above extreme normal limits.

It seems possible to us that this decrease of polymorphonuclears combined with a marked shift to the left in the nuclear picture may be the visible indication of a lowered resistance to certain infections. However, we do not feel justified in drawing any positive conclusions from the small number of observations already completed and merely refer to the matter here in the hope that it

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may arouse the interest of some other tropical worker. The Board expects to make further observations along this line in the next six months.

DR. STRONG'S CASE OF YAWS TREATED WITH EHRLICH'S "606."

At the meeting of the Manila Medical Society on September 5th, 1910, the Board saw a case of yaws in the advanced secondary stage which had been treated by Dr. R. P. Strong of the Bureau of Science with a single injection of 0.3 grams of Erlich's dioxydiamidoarsenobenzol. Three days after injection the papules and tubercles began to disappear and in a week they were all gone and the skin was smooth. The results appeared as marvelous as those which are being reported from Germany in cases of syphilis treated with the same drug. Reports from Russia state that the preparation brings about an immediate cure in relapsing fever. It therefore appears to have a specific toxic action on spirochetes.

POLYNEURITIS IN FOWLS DUE TO INANITION.

During the quarter the Board has been carrying out many experiments with fowls fed on various grades of rice, both alone and in conjunction with various drugs. On September 5th, 1910, a member of the Board (Kilbourne) presented before the Manila Medical Society two fowls, one of which had developed the usual polyneuritis when fed exclusively on polished rice while the other had developed the same condition as a result of inanition. The latter had been starved for 23 days, receiving only water and sterilized grit (gravel). For several days he had shown symptoms which might have been due to neuritis or to weakness. To settle the point we began to feed up this fowl at the end of the 23rd day, using a mixed diet which was known to prevent neuritis. His general condition promptly improved but the symptoms of neuritis were marked the day after feeding began, increased for several days, and then remained the same for a considerable time. Ultimately these two fowls with neuritis developed a spastic condition. Both had wing drop as well as leg weakness.

The fowl which developed neuritis while starving was finally killed and his leg nerves showed degeneration. Similar degeneration was found in the nerves of another fowl which had been starved on a reduced diet of neuritis preventing rice but had died

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before the symptoms of polyneuritis became sufficiently marked to make the diagnosis certain.

No other observer as far as we can learn has ever found polyneuritis developing as a result of starvation but in all the recorded experiments the fowls were allowed to go on to death.

When charting out the weights of fowls which had been fed on polished rice and fowls which had been starved it became evident that the average loss of weight was as rapid for fowls receiving a polished rice diet as for other fowls receiving no food at all. One of the earliest and most constant symptoms in birds fed on polished rice is anorexia and refusal of food. The possible effects on inanition, resulting from this loss of appetite, should not be overlooked when drawing conclusions from such experiments. In this connection it is of interest to note the words of Le Dantec who says that fowls fed on white (polished) rice die of inanition and not of beriberi.

In great contrast to the above were the weight curves of fowls fed exclusively on undermilled (unpolished) rice, none of which developed neuritis. They maintained a nearly uniform weight on that diet.

The other work we have been doing with fowls is not yet at a suitable stage for final report. The full details of the inanition experiments referred to above are reported in the Bulletin of the Manila Medical Society for September, 1910.

MISCELLANEOUS.

Considerable work on skin diseases, on Wasserman and Noguchi reactions, on dysentery organisms and on miscellaneous matters has been done during the quarter but is not yet ready for report.

On August 28th, 1910, a letter was received from the office of the Surgeon General directing the Board to carry out experiments to determine the number of meshes to the inch in wire gauze necessary to keep out the Philippine *Anophelinae*. Immediate steps were taken to have the necessary cages made but considerable delay will necessarily result because it is impossible to find gauze in Manila smaller than 18 meshes to the inch.

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Reprints and Translations.

REPORT OF THE MEETING OF THE "GERMAN NATURALISTS AND PHYSICIANS" HELD AT KOENIGSBERG, PRUSSIA, SEPT. 20TH, 1910, DEPARTMENT OF DERMATOLOGY AND SYPHILIS.*

EHRLICH: If a sufficient dose is given, the spirochetes disappear in 24 to 48 hours; if they do not I would take it as sufficient evidence that the dose was too small, the absorption conditions unfavorable or that arsenic tolerance had occurred in the spirochetes for which there exists certain evidence.

2. The second evidence of its specific action is the formation of specific antibodies. For a long time endeavors have been made to demonstrate the existence of specific antibodies, which should be able to produce a specific cure, but in vain. Neisser has labored long in this direction. In the cure with 606 there seems to be proof of the existence of these bodies. Neisser found that in a syphilitic mother nursing her child, after treatment with 606, the influence of the milk had a decidedly favorable influence on the hereditary syphilis of the child, the various manifestations disappearing rapidly. These observations have been confirmed by Duhot, Raubitschek and many other authors. It is well known that milk will hold an infinitesimal amount of arsenic; it is also known that the new remedy would not act in such entirely insufficient amounts, so that one is led to the conclusion that antibodies are formed and reabsorbed. Interesting confirmation of this comes to me from Marinescu; Plaut, Scholtz, Michaelis and Meirowsky who tell me that serum from patients treated with 606 tends to produce resorption of syphilitic affections. This proves again the formation of specific antibodies, which are able to inaugurate a cure. I am of the belief that such a serum treatment would not be sufficient to produce a cure, for if of 1,000 spirochetes one remains behind, this one is sufficient to produce relapses. The nursing immunity is, however, of the

*Translated by Dr. Julian C. Blesworth from a stenographic report.

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greatest importance in hereditary syphilis of infants. Wechselmann found first after injecting such infants, an apparent prompt cure resulted, to be followed after 6 to 7 days by severe illness, caused no doubt by the setting free of enormous masses of endotoxin from the destroyed spirochetes; therefore these toxins circulating in the blood are the cause of these secondary illnesses. The increase of the antibodies, however, would exclude these occurrences. Here the greater mass of spirochetes are killed, and as the antibodies have neutral characteristics, the rest of the spirochetes are made harmless. We thus have a strong healthy child who has a few spirochetes. We then give such a baby a sufficient dose to kill the rest of the spirochetes. This would again prove the specific action.

A second specific action, which perhaps is of still greater practical value, is the seroreaction, which was first discovered by Wassermann, Neisser and Bruck, and which is of great importance. From all available observations, it seems certain that this reaction stands in close connection with the presence and vegetation of the spirilli. This is a well known fact and I need not refer to it here any further. A series of interesting observations have been made by several investigators, which show that a negative reaction becomes first positive under the influence of the injection which subsequently gradually disappears again. This takes place in primary chancres at certain periods, and also but less often, in certain forms of latent syphilis. In certain forms in which a negative Wassermann is present, a positive reaction is produced by the injection. How is this explained? I believe, and I think you will agree with me, that in such cases the number of spirochetes is small, too small to give a positive Wasserman, but the injection suddenly dissolves out from the infiltrated and encapsulated deposits such numbers of spirochetes that the Wassermann becomes positive. Such a positive reaction, would therefore be proof positive of the syphilitic character of the malady treated. We can now estimate the value of the Wassermann reaction in the treatment with 606, it can not be estimated too highly. We may state positively that any case is not cured which shows a positive Wassermann reaction. But we have a certain number of cases in which the reaction remains negative. That the reaction remains negative, does not mean much; I think, as Neisser has explained, this negative reaction is only for a time. It may be that the remedy has destroyed all the spirochetes, of

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say 1,000, except 100; this small number is not sufficient to give a positive reaction, but as they gradually multiply, a positive reaction is the result. Therefore, every positive reaction following a previous negative one is to be considered in the same light as a relapse, even if no external evidences are present, and to be treated by a reinjection.

The treatment of syphilis by 606 is therefore, in view of the above statements not as simple as would appear at first thought. I have, however, never made the statement that all that was necessary was to inject the patient and then discharge him as cured. It will be the duty of physicians in the future, to examine their cases at stated intervals by the Wassermann reaction. This is a serious problem for the future, and it would be of the greatest value if a way could be found by which the Wassermann test could be made readily by every physician.

There is another effect of the remedy which is very difficult to explain. It has been reported to me from various sources that the remedy has often a marvelously rapid effect. Cases unable to swallow solid food for many months on account of severe pain in deglutition, had great relief a short time after injection. For instance, a case of gumma of the tonsil, treated for two months unsuccessfully, unable to swallow solid food, and injected at 2 o'clock, could eat bread and butter at 7 o'clock (5 hours later) without pain. Analogous cases can no doubt be cited by many observers. I know of one case of roseolar eruption, disappearing in three hours; cases of pain in the bones, where the pain disappeared in a few hours, disagreeable sensations of the throat so often found in syphilitics, disappear as if by magic; one case of chronic "macrochilie," patient had continuous itching of the tongue cured *one hour* after injection. Anatomical changes can not have taken place in such a short time. When a man can masticate, who previously could not, something must have been taken away; we are therefore brought to the conclusion that the cause of pain is due to a substance secreted by the spirochetes. If we assume that 606 combines in some way with the toxin and thus influences the pain, that would be the simplest explanation. We can assume that the remedy combines with the products of secretion and thus acts as an antitoxin. There are, however, certain observations which seem opposed to such a view, namely the fact that the opposite occurs, an increase in the symptoms. This observation is old and has occurred in the treatment by

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mercury; after injection occurs an intense redness, hyperemia. The first case of this kind comes to me from Italy, where they were in the beginning extremely cautious in the use of the remedy giving doses of from 0.025 to 0.05 and apparently with good results; the spirochetes disappeared, to reappear again in 5 to 10 days producing local relapses. The explanation in these cases, is according to my view that the parasites were not killed, but stimulated by the remedy. This increase of the poison secretion occasions the local symptoms. I am of the opinion that these various manifestations are due to insufficient action, i. e., insufficient dose.

Now a short word as to the therapeutic side of the remedy. I have always considered all arsenical preparations as dangerous, and have always contended that such a dangerous remedy should first be extensively tested. We can not expect that a remedy which kills the parasites in the body is entirely harmless. But the consideration of these remedies as poison should be a relative one. Consider, for example, chloroform, and use soldiers for its administration; you may give it in 50,000 cases without a single death, administer it to all classes of patients and you have one death in 2,060 to 2,080, a fairly regular mortality for many decades; but administered to cases with heart disease, and you would have a mortality of 1 to 2 per cent, or even more. The mortality of chloroform is not constant, but is dependent upon the quality of the patients. This law is applicable in all therapeutic preparations.

The next step in the use of a new remedy is experimentation, which meets many obstacles, for everyone using the remedy may meet with patients who have a natural hypersensitiveness for the drug, and who may die under its administration and thereby cause great trouble to the physician. I have had the good fortune to have Professor Alt in Germany and Professor Iversen in St. Petersburg make the first observations, in the use of the new remedy. Professor Alt used it principally in paralysis and later with Hoppe and Schreiber in recent cases of syphilis, and he was the first to establish its wonderful curative results, while Iversen independently made studies in relapsing fever, curing the disease in every instance with one injection and without relapses. These results only completed a small portion of the task before us, because I considered it necessary to have reports in at least 10,000-20,000 cases before turning the remedy over to the profession at

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large. It was necessary to know exactly the dangers of the remedy and to know when and where to look for them. Such a problem was not easy, because the testing of such a remedy has many difficulties and because I could not personally participate in all the tests. To use such a remedy at once on a large scale, would be unwise because damage would surely be done, which could be avoided by having the remedy used by a few men under the greatest care.

I selected the following gentlemen to carry on the first work, Wechselmann, Stern, Pick, Neisser and Schreiber, and later other eminent men were added. I now have records of 10,000 cases and I believe that probably 12,000 have been injected.

It has been proven that in the main the remedy is without danger. In this large number of cases, there has been only one fatal one, which properly could be ascribed to the remedy, this case was in Jena, a woman who should not have died, and in whom the death was no doubt due to shock. She was suffering from tertiary syphilis of the larynx and was very weak; she received an injection of an acid solution which was locally strongly irritating and very painful. The other deaths which were barely a dozen, were in cases of serious disease of the nervous system, such as tabes with cachexia, cases of idiocy in patients with softened brains, severe tabes with paralytic symptoms, etc. These were all cases in which the injection evidently caused death, because they died a few hours after, but they were without the injection candidates for death. But I am of the opinion that even a hopeless case should be injected if we have hope only of some improvement. Every surgeon undertakes a dangerous operation, to relieve, improve or cure and if the issue is otherwise and even causes death, the remedy should not be blamed. Buschke used the new remedy in five cases with two arsenic poisonings, which will seem very peculiar to one who has observed patients treated with 606. A case of severe epilepsy shows the value of 606 in desperate cases; patient had been an inmate of an Insane Asylum for two years and did not know his own mother. After the injection he had a frightful epileptic seizure, and the attending physicians expected death any minute. But the patient recovered and was so much improved that in four to five days he could speak, write and read. Another case of most severe syphilis with pneumonia, was at first refused the injection, because he was too weak; but the attending physician decided to give the

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remedy on the following day, with the result that the temperature dropped to normal in a few hours, and the patient was so well the following day, that he wanted to leave the hospital.

In bad paralytics I believe it is dangerous to use the remedy; even if it were possible to cure the syphilis in any of them his brain would be so seriously damaged that he would not be a useful member of society.

A second contraindication, are cases of diseased heart and arteries. I know of one case who died promptly after injection. in whom an aneurysm had ruptured. Even if we destroy the spirochetes, the aneurysm remains.

I would request an expression of those present here as to the technic. The kind of solution as well as the dose. In the main, the intravenous injection works quickest and is well borne in doses of 0.4 to 0.5. The best solution seems to be the alkaline, which has been tested by Alt and Iversen, and which has the only objection that it is pretty painful. The neutral emulsion of Michaelis and Wechselmann has this advantage that it is much less painful. The choice lies between these two forms and depends somewhat on the character of the patient. In neurasthenics, alcoholics, people sensitive to pain or in whom pain produces an objectionable effect upon the heart, the neutral solution would be preferable, while in other cases where the pain can be disregarded, the alkaline should be used, as it is the most effective and theoretically the best.

I believe it will be best in the future to combine both forms of injection, intravenous and subcutaneous. The double injection as practiced by Iversen seems the best in otherwise healthy individuals. The patient received 0.4 or 0.5 gram intravenously and a second dose subcutaneously or intramuscularly, the latter being slowly absorbed. For the latter the neutral solution is used, or the paraffine emulsion as practiced by Volk & Kromeyer.

The question as to dose: This depends on the patient, and no arbitrary directions can be given. In diseases of the nervous system, small dose, not more than 0.4, bearing in mind that here we have patients who are hypersensitive and who may react badly as regards heart and nervous system. In these cases furthermore, the number of spirochetes is very small and a small dose only necessary to kill them. It is important to use the Wasserman test continuously as a control, in order to arrive at a clear understanding of the curative value of the remedy. This is the most

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important part of the therapy. The time thus far elapsed is too short to say the final word as to syphilis. Of especial value is the work of Alt in paralytics whose work with arseno-phenyl-glycin covers two years. The latter is the same as 606 in its curative value, but has often shown disturbing after effects, which materially interfered with its use.

Alt found that in 16 per cent of the paralytics the Wassermann reaction disappeared, and thus far after two years has not returned, which promises much for the future.

To Recapitulate as to Treatment.—Cases with few spirochetes, paralysis, tabes and spinal syphilis require small doses, which if insufficient may be repeated. In otherwise strong individuals, I believe we should endeavor to get the full effect by the first dose, and that if necessary 0.8 to 1.0 can be given without danger, and I believe we can even go much higher. It is impossible to determine definite results in six months.

The remedy has also been used in other diseases. "Yaws" which is analogous to syphilis. The remedy has been tried successfully in the human subject in Manila. I believe it will act here in smaller doses, *Chicken-spirillum* is promptly cured by 606. *Relapsing Fever* has been cured by Iversen. Malaria has been much benefited. Dr. Haller reported the cure of one case of smallpox, of such severity as to be classed among the ordinarily fatal cases. This observation has been corroborated by my assistant Marks, who infected rabbits with vaccine and then shaved the skin of the back according to Calmette's method. The animals treated with 606 remained free, while the not injected ones showed a strong vaccination.

DISCUSSION:

Alt gives a review of this preliminary work in 606, first on animals, then on two assistants with a dose of 0.1 to ascertain local reaction. He confirms his previously expressed view not to produce new deposits of the drug in the body before we are reasonably certain that the previous dose has been used up. He enjoins particular care in patients with a chronic nervous disease, because 606 has not only great affinity for the spirochetes but for all newly formed syphilitic tissues, producing a hyperemic zone around the latter, and if this occurs in an unyielding capsule like the skull, it may produce pressure variations which at times may prove fatal. Such observations were made when using arseno-phenyl-glycin. In paralytics of the spastic form the remedy should not be used, because a seizure might easily be produced. Only in paralysis in the beginning and in taboparalysis can the remedy be used with success. Brain syphilis

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holds out good promise of cure by 606. The venous injection should be used with the care advocated by Schreiber. In tabetics, the relief of the pains is experienced only after the pain from the injection has passed away, during the latter period the pains are apt to increase. Atrophy of the optic nerve has not been observed by Alt.

Schreiber, Magdeburg.—The pains of the intramuscular injection, and particularly the fact that the strong alkaline solution, as well as the powder emulsion produced necrosis prompted him to use the intravenous injection. He shows his technic with a specially constructed canula. The intravenous injection, if technically correctly used, using a greater dilution, is no more dangerous than in the use of other drugs. I did not observe any untoward symptoms in 400 cases, even when a second dose was given. A 50 per cent ointment is of value in condylomata on account of its escharotic effect. The fatal cases of Buschke were due to faulty technic and not the remedy. He has never claimed that the remedy is not poisonous. He also emphasizes small doses in nerve cases specially with cerebral symptoms.

Iversen, St. Petersburg.—Reports 60 cases of relapsing fever cured by 606. Dose 0.3 gram. The attack is cut short and there are no relapses. Spirochetes disappear in 3 to 10 hours, together with reduction of temperature below normal and profuse sweating.

Iversen continued.—Reports on 100 cases of syphilis. First used the intravenous, now combines this with intramuscular, a total of 0.8 to 1.0. In six cases relapses, which disappeared after second dose. These had had less than 0.4 at first injection. In all stages of syphilis the effect is equally astounding, specially so in cases of malignant syphilis which had for years resisted treatment by usual remedies. Aspiration of enlarged glands of the groin showed no spirochetes 3 to 5 days after injection.

Iversen has also used the remedy in malaria. He cured at first a few cases of tertian; subsequently treated 27 tertian, 4 quartan, 27 tropical and 2 mixed tropical and tertian; dose 0.45 to 0.8 intravenous and subcutaneous. Tertian cured in 70 per cent by intravenous, plasmodia disappear in 12 to 24 hours permanently. Spleen tumor becomes smaller, except in a very few old cases. In 30 per cent the paroxysms stop but the parasites remain in the blood. Treated only 4 quartan, two of them did not react and two had less severe paroxysms with less fever. Tropical reacted poorly the improvement was only transitory, the parasites do not disappear from the blood and in a few days the fever returns. In four cases symptoms of irritation by the drug were observed similar to those described in syphilis treated by insufficient doses, fever, stronger attacks and appearance of new rings in the erythrocytes. In two other cases increase of fever after 5 days and instead of new rings semilunar form. He suggests a combination of 606 with quinine which might lead to a cure.

Orth of Berlin, demonstrated 2 preparations of the injected parts by Ehrlich's 606. 1. *Case of tabes,* death 12 days after injection, a mass size of walnut with yellow periphery and red center, although looking like pus microscope showed no suppuration neither did bacterial examination, the mass was principally composed of dead muscular fibres.

Second Case.—Death six weeks after injection. Case of carcinoma of pharyngolarynx, showed some microscopical findings of injected area.

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Margulies, St. Petersburg, found in *trypanosomes,* that carefully increased doses of 606 produced a tolerance of the drug and had no further influence on the microorganisms, even by a maximum dose. The parasites had become immune. *In spirilla (chicken),* it took much longer to produce this tolerance and when finally established, so that double the ordinary curative dose was without effect, it was found that the spirilli had lost much of their virulence.

The spirillum of relapsing fever could, however, not be made immune to the drug; after a tolerance to one dose had been established, a slightly increased dose would produce a cure promptly. Spirochete of syphilis acted in the same way.

Stern, Dusseldorf, does not think that the single dose of 0.5 is sufficient in all cases, and that even in 0.7 or 0.8 there might be formed ("Spirocheten stamm arsenfest"), and that the opinion of the laity that one injection cures syphilis is not correct.

Scholtz, Konisberg.—Speaking of technic. When not satisfactory pain severe; the injection according to Wechselmann may be slow and irregular in effect on account of incapsulated infiltrate.

Cites a case of hereditary syphilis, in which he gave mother 0.5 gram and found the papules squamous skin eruption healed in ten days.

L. Michaelis, Berlin: Spoke in favor of the use of the neutral suspension and denies that effect of the alkaline solution is quicker, the best method is the injection deep into the muscles of the back. The infiltration here is much less.

Grouven, Halle: 200 cases advises against its use in severe circulatory and nervous diseases. Does not recommend the intravenous injection on account of many unknown factors to be considered. He advises to proceed cautiously in cases of headache; fever; gastrointestinal disturbances; gout. The neutral injection is less painful but the result also slower.

Gluck, Sarajewo: 417 cases. 7 recurrences all treated by 0.3 gram. He advises watching all cases which heal slowly. Has used as large as 0.7 or 0.8 and in all his cases only observed one arsenic intoxication.

Friedlander, Berlin: 80 cases.

Volk, Wien: Advocates the suspension of 606 in liquid paraffine or olive oil.

H. Citron, Berlin: Reports on his technic. He makes his solution directly in the syringe and uses $CaCo_3$ for a precipitant and neutralizer. He claims absolute sterility of the solution, a neutral emulsion and hence acting without irritation and the amount to be injected is only 6 to 8 c. c., the avoidance of caustic alkalies and acid avoids all decomposition of the original preparation. His results emphasize the above conclusions.

Nagelschmid, Berlin, has treated a large number of tabetics. He begins with a very weak injection which is often followed by exacerbation of all symptoms, after the reaction has subsided, i. e., after one or more weeks a second dose of same size or a little larger, and so on until 1.5 or 2.0 have been taken;—he has had excellent results in improvement of patients. He urges in these cases not to use the Doses Magna Sterilizans.

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PERMANENT ACTION OF EHRLICH'S NEW REMEDY 606.*

Frankford, October 25, 1910.

Dear Doctor:

By dispensing nearly 40,000 flasks of the No. 606 preparation, I have provided a large number of colleagues with an opportunity to gather extensive experience concerning the efficiency of this remedy. The results of this treatment, as you will know from personal observation as well as through the publications in medical papers and the *Koenigsberg* reports, have been generally favorable, in part excellent, so that one is justified in asserting that the therapeutic value of the remedy has been positively established.

The indications and contraindications have also been determined. It has been found that dangers to the eye do not exist, and that with the exception of optic nerve atrophy, the preparation can be employed in the typical syphilitic affections of the eye, notably in gummatous iritis. A contraindication is known to be represented by *severe* affections of the nervous system; also diseases of the heart and blood vessels.

The first phase of testing No. 606, I am accordingly justified in regarding as concluded. Now begins the second period, which concerns the *permanent action* of the remedy. It goes without saying that the permanent action must depend upon a series of factors, namely:

1. The size of the dose, and its mode of application.
2. On the type of the disease.

In a general way, the guarantee of a permanent success may be said to increase with the original force of the therapeutic effect, which is naturally strengthened by the size of the dose and the rapidity of the absorption.

From this point of view the most efficient would seem to be:

1. *Intravenous* injection of an alkaline much diluted solution.
2. *Intramuscular* injection of the alkaline solution. Next in order follow:

*This translation was made for the Military Surgeon of a personal communication to an American friend by Professor Ehrlich.

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3. The very irritative acid solutions (mono and dichlor hydrate).

4. Lastly, the so-called neutral emulsions (intramuscularly, subcutaneously).

In the interest of the subject, I deemed it right in the first place to leave each individual investigator as much liberty as possible in the selection of the method, as it was only in this way that one could hope to expect a review concerning the relative value of the individual modes of injection, by comparing the accomplished results.

It has already been shown that the method which has probably been most entensively used, namely the *subcutaneous* introduction of the *neutral emulsion,* is less competent in regard to the permanency of the effect, than the other methods. This may be referable to the intrinsic difficulty of preparing the emulsions in absolute uniformity and delicacy. Under these conditions, the absorption of the remedy must be extremely variable, and it would seem to be especially unfavorable precisely in the case of subcutaneous application; at least this is suggested by the manifold complaints concerning persistent infiltrations, softening and necrosis. The extensive distribution and application of the emulsion is due to the fact that this injection, in contradistinction to the alkaline and acid solutions, gives rise to no considerable pain in the first place, and that the immediate result, moreover, was usually entirely satisfactory in the healing of the lesions. Presumably this is accounted for by the absorption of relatively small amounts of the remedy exerting a satisfactory curative effect, in view of the eminent efficiency of the preparation, so that the results at first leave nothing to be desired. But according to the news that I receive, it appears that the therapeutic effect in this method lacks the sufficient energy to obtain generally a destruction of the spirochetes, equal to sterilization.

In this respect, the *intravenous* injection evidently yields a better result of the treatment. The intravenous itself is very simple, as well as devoid of danger under proper selection of the cases, and much pleasanter for the patient. Altogether over one thousand cases have already been treated, namely over 500 by Schreiber, in Magdenburg; over 200 by Wientraud, in Wiesbaden; 200 by Iversen, in St. Petersburg; also numerous cases by Neisser (Breslau), Werther (Dresden), Gennerich (Kiel), Treufel (Frankfort), Broden (Leopoldville), Bitter (Cairo),

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and Hausmann (Tula). Concerning the technic the reader is referred to the enclosure.

As to the intravenous dose; at least 0.3, but usually 0.4 to 0.5 is injected by Alt, Schreiber, while Weintraud and others in a given case employ still larger doses up to 0.7 to 0.8.

Iverson, moreover, administers, two or three days after the intravenous injection (average dose 0.5), the intramuscular deposit (0.3 to 0.5), so that the total quantity amounts to about 0.8 to 1.0.

It is extremely important that the intravenous injection be repeated after two or three weeks, and this repetition is advisable when the curative effect of the first injection is not entirely complete, for example, when the lesions have failed to undergo a complete retrogression, or when a positive Wasserman reaction is still present at the end of four weeks. In these cases, the repeated injection is to serve as a "snapshot," (hit or miss) according to an expression used by Alt.

Signs of over irritability such as I had feared at first, have not as yet appeared, although in certain localities the intravenous injection has been repeated two or three times, or even four and five times, in isolated instances. According to all I learn, the method of intravenous injection seems to deserve the preference, in regard to permanent action, above the previously predominating modes of application, especially the subcutaneous method. Although I appreciate that there are certain technical difficulties in the way of the introduction into general practice of this procedure, still the selection of the most efficient mode of treatment is conclusively in the interest of the patient. It is therefore recommended that this method be introduced for the present, at least in hospitals and clinics.

The following features I wish to point out more particularly:

1. Primary lesions should be submitted to treatment as rapidly and timely as possible; and they should be injected with at least 0.5 gram intravenously, if the patient is a robust, youthful individual, as is usually the case. Aside from this, it would seem to be advisable, in the interests of actual sterilization, to make use of an energetic local treatment: extirpation, cauterization, or other tried and tested methods.

2. In affections of the central nervous system and the circulatory apparatus, when these are at all adapted to the treatment, great caution is indicated, and should be expressed in the

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application of small doses (0.2 to 0.4). Whether in these cases also, the intravenous injection is entitled to the preference, above the former modes of application, cannot be stated at the present time.

You will greatly oblige me by lending me your support, as heretofore, also in this direction, and by adopting in the future, as far as possible, the method of intravenous injection.

With best regards, etc.

Yours very sincerely, P. EHRLICH.

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Contributed.

One Aspect of Venereal Prophylaxis.—*Boston Medical and Surgical Journal* [Editorial].—Some of the phases of venereal prophylaxis touch unexpected places in the social fabric. One is the question of the division of responsibility between the individual who has contracted venereal disease and society which has permitted his infection. It happens that in the navy this is far from being an academic question, because the very practical matter of determining whether a man with venereal disease shall be considered to have received his infection "in line of duty" or otherwise comes frequently before medical officers, and their decision is of much importance both to the individual and to the service. It is the practice to consider venereal disease as contracted "in line of duty" only in those cases, which are by no means uncommon in the navy, in which infection has been innocently acquired. Perhaps this is the only just way, and yet the fact is being recognized more and more clearly that there is a certain responsibility, if not actual liability, which rests with the naval service for the enlisted man who becomes infected with venereal disease while serving his country afloat.

In an exceedingly interesting article in the *United States Naval Medical Bulletin,* Passed Assistant Surgeon Heber Butts discusses the justice of regarding general paresis as a disease which may be contracted in "line of duty." Since 1899 twenty-seven cases of general paresis have been admitted to the Government Hospital for the Insane from the active lists of the Navy and the Marine Corps. Seventeen of these cases were given "line of duty" in the reports of medical boards of survey. But practically all cases of general paresis give a positive Wassermann reaction, and Dr. Butts says that it seems fair now to conclude that cases of general paresis should be given "line of duty" only if positive evidence is furnished that syphilis was innocently acquired. If the mode of infection is to remain the test in cases of syphilis which do not result in general paresis, it seems only fair to apply it when that disease occurs.

At first thought it seems absurd to hold that the government is

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responsible at all for the enlisted men of the navy who contract venereal disease, and yet Dr. Butts shows that it is by no means easy to say just where the responsibility of the individual ends and the responsibility of the service to the man commences. He takes, as an instance, a farmer boy who enlists at some inland recruiting station as a coal-passer. "The navy takes him out of an environment in which, it may be assumed, prostitutes are few or unknown, and there is comparatively small danger of his becoming infected with syphilis. Sooner or later in the course of his service he is taken to an environment,—perhaps to the Orient,—to the fabled land 'east of Suez,' where he is told 'there ain't no Ten Commandments,' where syphilis is rife, where prostitutes are many, and where the restraining influences of father, mother, sister and sweetheart are removed. He frequently finds time passing slowly; clean places of amusement are few or absent; he feels an impulse while in Rome to 'do as the Romans do,' and the army of prostitutes which frequently follows a fleet like birds of prey exerts an influence amid conditions which in his home community did not exist. The responsibility for the acquisition of syphilis, general paresis or tabes by that young man may not be entirely his own. The naval service should share in it, I am convinced, though not to the degree of giving him 'line of duty' and a pension. That responsibility, too, on the part of the naval service increases according to the degree to which it is possibly able to protect its personnel from syphilitic and parasyphilitic diseases and fails to do so. The greater the opportunity to protect, the greater the responsibility."

One cannot help applying this to conditions in civil life. The young farmer whom Dr. Butts takes for his example might have gone to a distant city to make his way instead of enlisting in the navy. He would have lost the protecting influence of his mother, his sisters or his sweetheart in nearly the same degree, and temptation might come to him there in nearly as attractive guise and nearly as insistently as in the navy. Of course if he yielded and became infected with syphilis, a very large share of the responsibility would rest with him, but only the most superficial reasoning could convince one that some share would not rest also with the community which either neglected its "social problem" altogether or else turned it over to corrupt authorities to solve in the manner which would yield the largest return of financial gain or political profit.

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In the navy the responsibility is recognized, and there is a growing tendency to meet it by providing proper recreation for the enlisted personnel and by an energetic and very successful effort to limit infection by applying prophylactic treatment to those who have been exposed. It is a question whether in civil life we have recognized our responibility so clearly or considered very seriously the adoption of measures to prevent infection. Probably it is too radical to suggest that dispensaries should be established in certain parts of the city where young men who have been exposed might secure preventive treatment at any hour of the day or night by methods which have proved so useful in the navy, but, if we admit that the community has even a small part of the responsibility which is so freely recognized in the naval service, it is difficult to find the most logical reasons why no such efforts should be made.

Increase of the Medical Corps of the French Army.—*Le Caducée,* December 3, 1910.—Bills have been introduced in parliament to increase the medical corps, especially in the upper grades. As now organized, the medical corps offers so few prospects of promotion, compared with other staff departments, that the number of resignations and retirements has been steadily increasing and vacancies cannot be filled. Thus, in 1909, there were 72 resignations and retirements and only 57 appointments. Should the bills pass, as seems probable, the upper grades of the medical corps will consist of: 4 general medical inspectors, instead of 3, with rank of major general; 21 medical inspectors, instead of 14, with rank of brigadier; 50 principal medical officers of the first class, instead of 42, with rank of colonel; 92 principal medical officers of the second class, instead of 60, with rank of lieutenant colonel. V. HAVARD.

Concerning the Shabby Treatment of the French Medical Corps at the Hands of the War Department.—*Le Caducée,* December 17, 1910.—The editor continues the good fight in behalf of the medical corps in order to secure for it just and dignified treatment. He quotes the following articles addressed to the military authorities by a friendly member of the French senate:

"You refuse to them (medical officers) the consideration to which they are entitled as officers and the authority which is necessary for the discharge of their duties. You stint them in

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their measure of gold lace and deny them the right to wear the insignia of their rank in presence of the soldier. You speak of them as "assimilated officers;" yes, but assimilated only for the duties every day more onerous, for the responsibilities constantly growing heavier, but not for rewards, honors and the chances of promotion to the high grades of the hierarchy."

The editor refers to the fact that the "Arms" of the French Army do not include the Medical Corps. This, as well as the Intendance, are simply "services." He describes various mean and ridiculous distinctions enacted in recent orders against the members of the Medical Corps in reference to their uniform and equipment, bringing them down to the level of the Intendance, distinctions which he qualifies of "Chinese puzzles" and "Byzantine futilities." V. HAVARD.

The French Medical Service in Barracks.—*Le Caducée,* December 17, 1910.—The regimental service in French garrisons is, from the point of view of the physician and surgeon, very unsatisfactory. The average garrison is provided only with an infirmary, designed for such cases as need simply attention for 2 or 3 days before being returned to duty. Whenever a man receives a disabling injury or develops a serious illness, the regulations require his immediate transfer to the nearest military hospital, so that the surgeon-major and his aid are deprived of opportunities for acquiring professional experience. It does not follow that they are left idle, but all their time is taken up in the teaching and application of hygienic measures and the practice of preventive medicine, all very useful occupations but not sufficient to build up the perfect all-round medical officer. A project is now under consideration to remedy this serious defect.

V. HAVARD.

606 in the Treatment of Syphilis.—D. Manuel Salazar, Medico Militar.—*Revista de Sanidad Militar y da Med Mil Espanola of October 1st, 1910.*—One may be assured that there is not in the medical science of today a man more competent for the study of the chemical means applied to the treatment of infectious diseases than Prof. Ehrlich, director of the Institute of Experimental Therapeutics of Frankfort. Due to his high reputation, the medical world has received with respect his discovery of a new method for the treatment of syphilis by the use of the mono-

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sodium or bi-sodium salt of the bichloride of dioxido-diamido-arseno-benzol, baptized with the cabalistic number of 606.

If true, the discovery of Ehrlich is not only a therapeutic triumph in one of the most grave diseases affecting mankind, but what is more is the institution of a scientific principle for the cure of infectious diseases in general which may in the future produce the greatest benefits to humanity.

There are two methods of curing infectious diseases; one which is based on the use of the same means which nature produces and uses for the spontaneous cure of infections, as for example, serum therapy in diphtheria; another which consists in the discovery of a chemical substance, which working in the organism, upon the specific germ of the disease, has the virtue of destroying the germ without great disturbance to the patient.

The chemical means recognized until now as efficacious in the treatment of the infections are very few in number, as quinine in malaria, mercury in syphilis and atoxyl in sleeping sickness.

The use of atoxyl in the treatment of sleeping sickness and more lately in other diseases of micro-zoological origin, and in syphilis is the starting point in the recent investigations of Ehrlich.

The scientific principle upon which Prof. Ehrlich's investigations have been founded, is to search among the members of the diamido-arseno-benzol series for a substance which has, as for example, differential selective action on certain living elements which the aniline dyes have, and which substance when found may have the virtue of carrying the germicidal action of the arsenic by some singular preference directly to the treponema of syphilis without injuring the tissues of the body, that is to say, in the same manner that a determined coloring matter has an especial affinity for nuclei, or for protoplasm, or for the protoplasmic granules of certain determined living and anatomic elements. In this way it may be believed that one of these bodies of the arseno-benzol series might have a preference for combining with the organism causing the disease and be capable of destroying it by direct chemical action without lesion of the human organism.

The benzol is supposed to act only as a special vehicle for the arsenic, which is the substance *par excellence* which acts on the body of the microbe for which it appears to have a special affinity.

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The cells of the tissues and the bodies of the microbes have in the conception of Ehrlich, their lateral chains and receptors which attack certain chemical substances in preference to others, and it is the foundation of his chemico-therapeutic doctrine, to discover the specific microbio-tropic substance against infections.

In the present instance it is very difficult to determine the true value of the medicament discovered by Ehrlich; without doubt the many cases observed (more than 11,000), by specialists in various countries, particularly in Germany, demonstrate in an indubitable manner that the new remedy is capable of making a favorable change in the clinical aspect of the patient in the three stages of the disease in a very surprisingly rapid manner and with only a single injection.

It has been demonstrated that patients treated by mercury with scarcely any result, some having the disease in grave, rapidly progressing forms with the most hopeless prognosis have been improved and cured almost miraculously by one single injection of 606. In the opinion of Neisser, (one of the most respected authorities) the specificity of the drug cannot be doubted.

The question which immediately comes up is the following: Is the cure permanent? In order to answer this question, the Wassermann reaction naturally occur to one. Neisser himself states that only 10% of these cases have had a positive reaction change to a negative one after the treatment; other observers believe that the change in the reaction takes place in a larger percentage of cases.

Without doubt one must take into consideration the fact that the reaction of Wassermann depends on the presence of syphilitic antibodies in the blood serum of the patient and it is reasonable to believe that the syphilitic antibody will possibly continue in the blood for some time after a cure is accomplished. If this is accomplished as rapidly as it appears to be, by the death of the treponema, thanks to the microbicidal action of the drug. We have here then the reason why the disappearance of the Wassermann reaction cannot serve as an indication of a definitive cure, it may be, some time later.

Another question which occurs to one in judging of the virtues of the new drug, can it, as is the case with atoxyl, injure the nervous elements of the retina or other important organ? One cannot without a large experience with the drug decide conscientiously

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whether or not its elective power is exerted solely on the germ of syphilis, or if it attacks the important tissues of the body as well.

For the present Ehrlich recommends great caution, to examine the fundus of the eye in all cases and to prohibit its use in cases which present the slightest retinal change, at the same time he states that 606 must not be used in individuals suffering with diseases of the nervous centers or of the cardio-vascular system, especially arterio-sclerotics. It will not be strange if these limitations are increased with a larger experience with the drug. It is well to know that Ehrlich has given account of deaths occurring during the course of treatment, two cases almost moribund when received and three suffering with grave lesions of the central nervous system.

The best results appear to have been obtained by intramuscular injections in the gluteal region; Ehrlich has observed that some time after the injection a certain quantity of the drug remains in the muscular tissue at the site of the injection, which indicates that absorption takes place slowly, diffusing through the organism little by little and exercising its action directly on the spirocheta. Ehrlich has demonstrated that children suffering with congenital syphilis can be cured by taking the breast of the mother after the latter has received a single injection of 606, which shows that the drug is not only specific but exceedingly powerful.

In resumé, it may be said that the name of Ehrlich is a guarantee of accuracy and that up to the present time, the observations of eminent specialists of various countries are favorable to the drug, it is necessary to know, however, whether or not the improvement obtained from the drug is permanent or temporary and if 606, as is the case with atoxyl and other similar preparations, can cause disturbances of the organism which will confine its use to limits as yet unknown. R. S. PORTER.

Mental Troubles in Sleeping Sickness.—*Le Caducée*, December 3, 1910.—Dr. Emily describes the psychical disturbances in three cases of sleeping sickness, which appeared before the diagnosis had been made, and were soon followed by coma and death.
V. HAVARD.

Typhoid Bacillus Carriers.—After referring to a former paper (*The Journal A. M. A.*, Oct. 16, 1909, p. 1253), in which

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he had discussed and explained typhoid immunity, W. J. Stone, Toledo, Ohio (*Journal A. M. A.*, November 12), remarks that one of the most interesting problems of typhoid at the present time is that of typhoid carriers. Nearly all these individuals are not seriously inconvenienced themselves by the presence of the infective agent in their system, and this is true of those who have become carriers through contact with the disease—contact carriers—who have not themselves had knowledge of having typhoid. Their tolerance is probably explainable by a natural immunity or by partial immunity from an earlier unrecognized typhoid infection. It is not illogical to assume that their immunity is due to those antitropic substances concerned in active phagocytosis, while lowered antibacterial substances, such as the bactericidins, permit the infection to exist for years without eradication of the bacteria. In most instances, typhoid carriers have been discovered in hitherto unexplainable endemic outbreaks. A large number have been women, who have in some way been connected with the preparation or the handling of food products. The time since the original attack has varied in the recorded cases from one to fifty-four years. The difficulty of differentiating carriers of typhoid and of other closely related bacteria, like the colon bacillus, is noted, and Stone mentions two patients under his care at present who had been considered typhoid carriers, but have since shown doubtful symptoms. He thinks, however, that one may differentiate these cases by the local reaction to autogenous vaccines. The colon vaccine is much more toxic than typhoid vaccine, though occasionally we meet with a mild strain. The typhoid-carrier problem is a perplexing one, complicating the conditions, especially in cities. It will be possible, however, for physicians to educate their patients and keep in mind the typhoid attack in connection with certain symptoms like mild cystitis or dysentery. Segregation of chronic carriers is practically impossible, and a considerable percentage of those attending typhoid cases may themselves become carriers without knowing that they have the disease. Park has estimated that probably one in every 300 adults who have never knowingly had typhoid is a typhoid bacillus-carrier. Urinary and intestinal antisepsis has not been found of value in treating these cases, but treatment by autogenous and stock bacterial vaccine seems to offer more chance of success. As has been shown by the author's previous paper, the bactericidal substances are increased four or five-fold by in-

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oculations of typhoid vaccine. While a stock vaccine is efficient, it is probably better to use an autogenous one, and Stone reports a case treated in this way with good result. A survey of the literature, he says, citing typhoid carriers treated by bacterial inoculation, though not extensive, seems to warrant the following conclusions: "1. The time element is an important factor in the reaction of susceptibility to inoculations of bacterial vaccines in typhoid carriers. Typhoid carriers injected within a comparatively short time after their infection, will in all probability receive more benefit from properly prepared autogenous vaccine than from any other known form of treatment. 2. 'Contact carriers,' who never to their knowledge have had typhoid, are more susceptible to the inoculations than carriers who have had a definite attack of this disease, and who are in all probability more immune. 3. When the infection has persisted for years, it may be difficult to clear up the condition by bacterial inoculation. The effort should at least be made, since in the somewhat similar condition chronic carriers of apparently non-virulent tubercle bacilli, the bacilli often disappear from the sputum during a course of inoculations of some one of the tubercle products. 4. The immunity manifested by typhoid carriers is in all probability a partial immunity, in the sense that while these individuals are protected against the infection through an augmented phagocytic power held by their body cells, the antibacterial substances, such as the bactericidins and lysins, are lessened to a degree insufficient to exert any destructive power against the infection."

Experiments with Automatic Pistols.—*Le Caducée,* Dec. 3, 1910.—As the result of numerous experiments in France and Germany, military authorities recognize the great superiority of automatic pistols over those now in use, but there is no probability of any immediate change on account of the cost involved. Of the two calibers experimented with by Hans Daae (Deut. Med. Zeit., Oct. 5), namely 9mm. and 11.40mm., the latter proved decidedly the more effective weapon. V. HAVARD.

Legal Medicine. Remote Effects of Cranial Traumatisms.—*Le Caducée,* Dec. 3, 1910.—Drs. Simonin and Benon, of the Val de Grace School, reports two cases in which a chronic incurable state of psycho-neurosis or dementia praecox followed injuries of the head. V. HAVARD.

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A New Method for Demonstration of Tuberele Bacillus.—Dr. St. Pekanovich (*Pester Medicinisch-Chirurgische Presse,* 1910, No. 46, p. 353).—The author's procedure, which requires no more than 10 to 15 minutes, is as follows:

To 5 to 20 cc. of sputum (corresponding to its concentration and consistency), are added about 3 to 4 times as much 20 per cent. antiformin in an Erlenmayer flask and the whole shaken until the sputum is dissolved, i. e., until a quite homogeneous fluid is obtained. If the sputum is very thick and difficult to render homogeneous, the flask is held a short distance above a flame, whereby oxidation is hastened. The whole is cooled and then sufficient 30 per cent. lead acetate added to give a characteristic flocculent, white precipitate. The lead acetate should not be too sparingly added, for if a little is added the precipitate is slight and dust-like. The precipitate thus produced is collected, under constant agitation of the flask, upon a filter or separated by centrifugation, the latter method being preferable because it is most rapid. The precipitate is then spread upon a slide, fixed by heat (flame), and well stained (two or three times will do no harm) with carbol-fuchsin. The bacilli stain bright red and are found in clumps, for which reason the whole preparation should be examined to avoid overlooking the groups.

In the sputa examined by this method the author always found tubercle bacilli, except in one case in which the ordinary methods, even after repeated stainings, gave negative results, and in which there was only a suspicion of a pulmonary lesion. With the same metnod tubercle bacilli can be demonstrated also in exudates, blood, feces and even in organs, though in this respect, with exception of exudates in which the results were positive, the author has had no practical experience.

Whether the tubercle bacilli obtained in this manner can be cultivated must be left for further experimentation to decide.

J. F. Siler.

A New Method of Staining Flagella.—A Casares Gil, Medico Mayor, *Revista de Sanidad Mil. y la Med. Mil. Espanola,* Sept. 15, 1910.—From a 24-hour culture on slant agar, one loosens with a long straight knife a small portion of the superficial part of the agar to which the culture adheres.

Place this small bit of agar with its adherent bacteria in a watch crystal with a few drops of distilled water, move it about

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slowly to favor the formation of a bacterial emulsion; this liquid when strongly turbid is turned into a small test tube and diluted until it presents no more than a slight opalescence. Allow this solution to settle for a few minutes, then decant the supernatant portion into another tube and add one drop of formalin or a one per cent solution of osmic acid.

With the platinum loop deposit a number of very small drops of this clear solution on a slide or cover glass, dry in air.

Cover the preparation with a few drops of the following stock solution, diluted in 4 or 5 times its volume of water, shaken well and filtered:

Stock Solution.—Alcohol 30.00, Tannin 10.00; dissolve and add, Aluminum Chloride 18.00, dissolve and add, Zinc Chloride c. p., 10.00, Distilled Water 8.00. Mix all thoroughly and add, Fuchsin 1.00.

Mix all thoroughly until no sediment remains and put up in glass stoppered bottle without filtering.

Two or three minutes after the preparation is covered with the solution, the flagella are stained.

Wash well immediately in running water, dry with cigarette paper.

Counter stain a few instants with gentian violet, wash, dry in air and mount in Canada balsam. R. S. PORTER.

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Reviews.

THE PRACTITIONER'S DICTIONARY. An Illustrated Dictionary of Medicine and Allied Subjects, Including all the Words and Phrases Generally used in Medicine, with their Proper Pronunciation, Derivation and Definition. Based on Recent Medical Literature. By George M. Gould, A. M., M. D., author of "An Illustrated Dictionary of Medicine, Biology, and Allied Sciences," "The Student's Medical Dictionary," etc., etc. Second Edition. Illustrated. Octavo of 1,043 pages. $4.00 net. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia.

This excellent medical dictionary made a place for itself by its first edition. The second edition fully sustains the claims of the previous one. Several important novelties are noted. The metric system of weights and measurements has been added; the additions and charges in the new Pharmacopeia have been inserted and the recommendations of the new [B N A] anatomic nomenclature. Many new illustrations appear. The publishers despite the inclusion of new matter have succeeded by mechanical means in keeping down this edition to the original size.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pædiatries, Obstetrics, Gynæcology, Orthopædics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and Other Topics of Interest to Students and Practitioners. By leading members of the Medical Profession throughout the world. Edited by Henry W. Cattell, A. M., M. D., Philadelphia, U. S. A., with the collaboration of Wm. Osler, M. D., John H. Musser, M. D., A. McPhedran, M. D., and many other notable physicians of the world. Regular correspondents in Montreal, London, Paris, Berlin, Vienna, Leipsic, Brussels, and Carlsbad. Vol. IV. Twentieth Series, 1910. Philadelphia and London: J. B. Lippincott Company, 1910.

The present volume of this well known quarterly contains several articles of special interest to the military medical officer. Among these are two on the use of "606." If the promises of this apparently wonderful remedy are fulfilled the benefit to the services will be incalcuable and by no one are reports on it studied with more care than by medical officers.

An article entitled "Wounds by Fire Arms," by William S.

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Wadsworth, M. D., Coroner's Physician, Philadelphia, while not written from the military standpoint is well worth perusal by members of the Association.

THE SEXUAL DISABILITIES OF MAN AND THEIR TREATMENT. By Arthur Cooper, Consulting Surgeon to the Westminster Dispensary, Formerly House Surgeon to the Male Lock Hospital, London. Octavo of 104 pages. Second Edition Revised and Enlarged. $2.00 net. Paul B. Hoeber, 68 East 59th Street, New York, 1910.

This is a valuable little book which as the author states treats of matters which receive but scanty recognition in the medical school. The various causes of sexual disability are discussed briefly, but clearly and the comparatively large percentage of pages devoted to treatment contain much of interest to all practitioners.

THE DISEASES OF CHINA, INCLUDING FORMOSA AND KOREA. By W. Hamilton Jefferys, A. M., M. D., University of Pennsylvania, Medical Missionary in China, Professor of Surgery, St. John's University; Surgeon to St. Luke's Hospital, Shanghai; Editor China Medical Journal, and James L. Maxwell, M. D., London, Medical Missionary in Formosa; Chairman China Medical Missionary Association Research Committee. With 5 colored plates, 11 noso-geographical plates, and 360 illustrations in the text. Octavo of 716 pages. Price, $6.00 net. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia.

While many Americans and Europeans have practiced medicine and surgery in China this is the first scientific work ever produced dealing exclusively with the nosology of that Empire The authors have had exceptional opportunities to study conditions peculiar to China. The book is not a general text-book nor indeed does it treat of all diseases encountered in China. The aim of the authors as announced is the production of a concise account of the special diseases which are met with in practice in that Empire. The first two chapters are introductory and discuss modern scientific practice, the old empirical practice and nosogeography and nosology. Chapters III to XIII are medical, while chapters XIV to XXII are surgical. The last two chapters treat of hygiene among the Chinese and of hospitals and hospital construction in China. The engravings, which are excellent, are nearly all from photographs of the authors. The colored plates and the nosogeographical maps much enhance the value of the illustrations.

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A TEXT-BOOK OF BACTERIOLOGY. A Practical Treatise for Students and Practitioners of Medicine. By Philip Hanson Hiss, Jr., M. D., Professor of Bacteriology, College of Physicians and Surgeons, Columbia University, New York City, and Hans Zinsser, M. D., Associate Professor in Charge of Bacteriology, Leland Stanford University, Palo Alto, Cal. With 156 illustrations in the text, some of which are colored. Octavo of 745 pages. D. Appleton & Company, New York and London, 1910. Price, $3.75.

This book is divided into sections as follows: I. The General Biology of Bacteria and the Technique of Bacteriological Study; II. Infection and Immunity; III. Pathogenic Microorganisms; IV. Diseases of Unknown Etiology; V. Bacteria in Air, Soil, Water, and Milk.

The authors are gifted with an attractive style and all are treated in a wholly adequate manner. The book is not over-illustrated, but the cuts are sufficient in number and are appropriate to the text. The authors are to be congratulated on a work well adapted not only to the use of students, but also to that of practitioners who desire to keep posted on the advances of modern bacteriology.

DISEASES OF THE ANUS, RECTUM AND SIGMOID. For the use of Students and General Practitioners. By Samuel T. Earle, M. D., Professor Emeritus of Diseases of the Rectum in the Baltimore Medical College; Surgeon in Charge of Rectal Diseases at St. Joseph's Hospital, the Hebrew Hospital, and the Hospital for Women. With 152 illustrations in the text. Octavo of 476 pages. J. B. Lippincott Company, Philadelphia and London.

This is a comprehensive work on the subject of which it treats. Anatomy and physiology are first discussed then methods of examination. A chapter on constipation follows. After this come numerous chapters on the diseases and injuries of the anus, rectum and signoid. Pathological lesions of the cocyx and congenital idiopathic dilitation of the colon (Hirschsprüng's Disease) also receive attention.

The material is carefully selected; the book is clearly written and well illustrated.

THE PRACTICE OF SURGERY. By James G. Mumford, M. D., Instructor in Surgery in the Harvard Medical School. Octavo of 1,015 pages, with 682 illustrations. Cloth, $7.00 net; half morocco, $8.50. W. B. Saunders Company, Philadelphia and London, 1910.

The object of the author in the present work as announced in

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the preface is to give the reader an account of the practice of surgery as he will see it at the bedside, in the accident ward, and in the operating room, and in this object he has succeeded admirably.

The arrangement is unusual. Surgical diseases are taken up as far as may be in their order of interest, importance and frequency. There is much to commend in this plan as subjects are presented in their true prospective. For example, appendicitis of much importance to all surgeons is the first subject discussed, while amputations, which are so seldom necessary now-a-days, are relegated to the rear. The book may be highly commended to both the student and the practitioner.

THE CAMPAIGN OF CHANCELLORSVILLE: A STRATEGIC AND TACTICAL STUDY. By John Bigelow, Jr., Major, U. S. Army, Retired, Author of "Mars-La-Tour and Cravelotte," "The Principles of Strategy," and "Reminiscences of the Santiago Campaign." Octavo, 527 pages, with maps and plans. Price, $10.00 net. Yale University Press, New Haven, Conn.

Major Bigelow in his present volume has written a book which merits careful study by all officers. While this work has little to say in reference to the medical department at Chancellorsville, many important facts are brought out of special interest to officers of that department. One cannot fail to be impressed with the increased difficulties which the medical department labors under now in battle as compared with Civil War times. These are in great part due to the increased effective range of modern field artillery and infantry fire, but the increase in front in modern battle also makes it much more difficult to succor wounded promptly.

In Appendix V. a letter to Hooker from Letterman, who was chief surgeon, is quoted in part. This states that on March 28th the whole number of sick in the Army was 10,777. Letterman invites attention to the fact that the greatest ratio of sickness was in the new regiments. Too many new regiments at the present time in the face of a powerful foe would seem to spell something like disaster. Even greater disaster is likely to result from the physical incapacity of a commander.

On page 477 the author comments briefly on General Hooker's irresolution. Whether this was due to the injury which he received at Chancellor House or to some other cause is not apparent.

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Index to Current Literature.*

ORGANIZATION AND ADMINISTRATION.

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YOUNGE (G. H.) [The etiology of soldier's heart.] *Brit. M. J.*, Lond., 1910, ii, 1470.

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Editorial.

LACK of funds will prevent the organization of this year's instruction camps for medical officers of the organized militia. This decision has lately been reached by the Secretary of War, and certainly there is no disposition to question it in the pages of this journal. We cannot but feel, however, that the results to our medical department are likely to be bad from the standpoint of efficiency and the hope is expressed that as soon as sufficient funds are available camps may again be established.

It is probably no news to the majority of our readers that these off year medical department camps, as they have been generally termed, proved an eminent success in 1909, when they were first organized. The plan appealed so strongly to the War Department that not only were medical department camps established, but similar camps for the Signal Corps and the Engineers. It has therefore apparently been appreciated that these corps require the training which can only be obtained in camps devoted solely to their special interests. So far as the medical department camps are concerned everyone who attended them was enthusiastic in their praise. Medical officers of the organized militia commonly state that they learned more of their duties in one year at a medical department camp than they had in ten tours of camp duty under old conditions. Nor could this hardly be otherwise. Former national guard camps need not be taken too seriously in the light of our present knowledge. It is hardly too much to say that in the general camps of today everything operates against the practical education of the medical officer in matters which would make him truly efficient in war. At the medical department camps the instructors were selected with extreme care. At general camps this cannot always be the case. Of course, every medical officer however competent in other respects is not necessarily a good teacher. The general camps afford far too little time for the instruction of medical officers. All members who attended the recent meeting at Richmond will remember the semi-humorous description by a well known national guard medical officer of the conditions which existed at one of

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our general camps of last summer. So insistent were demands regarding instruction that great difficulty was experienced in doing full duty to his regiment in respect to sanitation and other matters. Of course, regimental duty also interfered seriously with the instruction. This, it is thought, must inevitably be the case in similar camps. At the medical department camps the equipment, so far as it went, was complete and for the first time we had a field hospital and ambulance company section as prescribed by regulations. The benefit to be derived by all medical officers in thus having an opportunity to study something real instead of the largely imaginary medical department organizations which have always characterized our general maneuvers cannot be overestimated.

A statement of the benefit conferred by medical department camps would be incomplete if no reference were made to the esprit de corps created by the close association of medical officers of the regular establishment and those of the organized militia. This could not fail to result in increased efficiency in war as well as in peace.

An efficient army may be compared to a mosaic composed of many different parts, which properly fashioned and put together, make the perfect whole. Perfection of the entire structure is, of course, the desire of every officer in the service. Differences of opinion in respect to how this may be accomplished doubtless obtain, but it seems fair to conclude that if the component elements making up our army are not properly fashioned for their purpose before being put together that a hodgepodge will result rather than anything resembling a mosaic.

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From time to time articles on the use of iodine in emergency surgery have appeared in these pages. One of our foreign delegates to the Richmond meeting, Colonel Antelo, of the Argentine Republic, contributed a specially valuable article on this subject. Even more recently Major F. T. Woodbury, Army Medical Corps, one of our members, has published an interesting paper on iodine in the New York Medical Journal.

An excellent method of packing iodine for field use has lately been evolved by Major C. R. Darnall, in charge of the Army Field Medical Supply Depot, Washington, D. C. Tincture of iodine has always proved difficult to transport as it is liable to

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ruin much of the contents of field chests. Major Darnall now packs iodine in tubules about the size of a hypodermic tube. These are sealed. Twenty are placed in a small box in such a way that there is no danger of breakage. Alcohol is used to make the tincture. The latter is one of the articles contained in the medical, the surgical, and the detached service chests to all of which the iodine tubules are now supplied.

Without discussing its other uses all evidence seems to indicate that in iodine we have a substance which adds greatly to the armentarium of the surgeon at the front. Though notable improvements have been effected in first aid packets of recent years we have pretty well stopped there so far as the needs of the front are concerned . Naturally, no surgeon would think of removing a well applied first aid dressing at a dressing station, but suppose that the dressing has been ill applied or it is soaked with blood. Then it must, if possible, be removed. In the absence of facilities for clean work at a dressing station, which must usually be the case, without iodine about all that can be attempted by the surgeon is to apply another first aid dressing or a dressing which answers the same purpose. It is certain that painting iodine around the wound, such a simple procedure that it can be done in the great majority of cases, will do much to prevent infection; far more than can redressing without iodine.

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News of the Services.

The following important circular was furnished THE MILITARY SURGEON through the courtesy of the division of militia affairs:

War Department, Division of Militia Affairs,
Washington, November 9, 1910.

Circular No. 19.

The Field Service Regulations, edition of 1910, provide for each military division certain *sanitary troops*. This is a new designation for troops of the United States service and applies to the commissioned and enlisted personnel of the Medical Department which is assigned to field sanitary service.

The normal assignment of units of sanitary troops to a military division is four ambulance companies and four field hospitals.

An ambulance company consists of twelve ambulances, three escort wagons, the necessary horses, draft and pack animals, with a commissioned personnel of four officers, a maximum enlisted strength of seventy-nine and a minimum of forty-three.

A field hospital consists of medical supplies and equipment for one hundred and eight patients, eight escort wagons, the necessary horses, draft and pack animals, with a commissioned personnel of five officers, a maximum enlisted strength of fifty-seven and a minimum of thirty-three.

Sanitary troops are distributed to the organizations of combatant troops which compose a military division as follows:

One ambulance company and one field hospital to each brigade.

One ambulance company and one field hospital to the auxiliary troops, consisting of two regiments of field artillery, one regiment of cavalry, one battalion of engineers, and one battalion of signal troops.

The duties of an ambulance company are (1) to establish and operate dressing stations in a locality of comparative safety where they can be reached by the ambulances and as near as possible to the regimental first-aid stations, (2) to help the sanitary troops of the regimental first-aid stations, and (3) to carry the sick and wounded on litters to the dressing stations, or to the farthest point reached by the ambulances, and hence in ambulances to the field hospitals.

A field hospital is a mobile sanitary unit, centrally located beyond the zone of conflict, usually three or four miles in the rear of the dressing stations. Its function is to receive, care for, and shelter the sick and wounded which come to it from the dressing stations. They are evacuated as rapidly as possible, the patients who cannot return to duty being transferred to the stationary hospitals on the line of communication farther to the rear.

Recent investigation by the Division of Militia Affairs demonstrates that, with rare exceptions, no ambulance companies or field hospitals have

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been provided for in the organization of the Organized Militia of the states and territories. In case of mobilization, therefore, in military divisions, there would be an almost complete deficiency of sanitary units which normally should be provided therefor.

It is desired to urge this fact upon the attention of the militia authorities of the states and terriotries and, by reason of its importance, to urge further that steps be taken to provide more adequately for this particular feature of field service organization.

State and territorial militia authorities should be impressed with the importance of the fact that the organization of these units of sanitary troops is one of the *essential* auxiliary means for the maintenance of combatant troops in the highest state of efficiency for field service. In this connection reference is made to Article X, page 179, Field Service Regulations, edition of 1910.

Aside from their importance from a military point of view, the possession of such trained, organized, mobile, sanitary units, capable of despatch in a few hours to scenes of civil disaster, such as fires, floods, earthquakes, cyclones, etc., is a most valuable asset for a commonwealth to possess and a potent source of popularity and encouragement for the existence of an organized militia.

The United States Government has on hand and ready for issue about forty field hospitals (matériel) which can be issued to the Organized Militia of the United States, under the provisions of section 1661, Revised Statutes, as amended, or section 13 of the Militia Law, or purchased for cash under the provisions of section 17 of the Militia Law. The cost of the medical property pertaining to a field hospital, complete, is $5,950.

In a number of states it is believed the cost of a field hospital can be materially decreased by reducing their regimental hospitals to regimental infirmaries, as provided in paragraph 593, Manual of the Medical Department, 1906, and the surplus supplies resulting from this change applied toward the equipment of a field hospital.

By way of suggestion it may be indicated that the sanitary personnel attached to a normal military division should consist, in accordance with the Field Service Regulations, edition of 1910, of—

1 lieutenant colonel, chief surgeon.
1 lieutenant colonel, sanitary inspector.
19 majors (one assistant to chief surgeon).
80 captains and first lieutenants (one assistant to chief surgeon).
35 sergeants, first class.
97 sergeants and corporals.
745 privates, first class, and privates.

States having a military force approaching in strength a normal military division should organize their sanitary service accordingly.

States having an incomplete divisional organization may properly organze the sanitary service thereof in reduced proportion. For example, the state of Ohio, whose divisional organization approximates 6,000 men, has, in a recent order, provided 69 medical officers and 282 enlisted men (Hospital Corps). This number being regarded as sufficient to supply the sanitary personnel for all existing combatant organizations and for two field hospitals and the two ambulance companies now composing the Or-

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ganized Militia of Ohio, the order further provides that this sanitary personnel shall be increased as the needs of the service demand.

The equipment of a field hospital is prescribed in paragraphs 581 to 590, Manual of the Medical Department, 1906, and that of an ambulance company in paragraphs 594 and 595.

States which have only a brigade organization may well organize for sanitary personnel to include—

6 majors (one to be chief surgeon and one to be sanitary inspector).
19 captains and first lieutenants (one to be assistant to chief surgeon).
9 sergeants, first class.
22 sergeants and corporals.
178 privates, first class, and privates.

This personnel would be sufficient for the combatant units and for one field hospital or one ambulance company.

States and territories having a military force of less than brigade strength, but greater than one regiment, should provide a sufficient sanitary personnel to assign an adequate number to combatant organizations for first-aid station service and one unit of sanitary troops, either one field hospital or one ambulance company.

States or territories having a military strength equivalent to a regiment or smaller unit should provide a sanitary personnel and equipment consisting of one major, three captains, one sergeant (first class), three sergeants and corporals, twenty privates (first class) and privates, mounts, one wagon, four draft horses, and one pack animal.

In some instances section 3, Militia Law, has not been complied with satisfactorily, in so far as relates to commissioning and designating medical officers. These officers have not in all cases been commissioned as officers of a *medical corps*, but as regimental medical officers. In other states medical officers have been commissioned as "surgeons" and "assistant surgeons," whereas no such titles exist now in the Regular Army. Some states and territories have not as yet made provision for an enlisted sanitary personnel, and others have not provided medical or surgical supplies and equipment.

It is hoped the above irregularities and deficiencies will be corrected, in order that the sanitary personnel and equipment throughout the organized militia may conform more fully to the standard and organization of those of the Medical Department of the Army.

BY ORDER OF THE SECRETARY OF WAR:

LEONARD WOOD,
Major General, Chief of Staff.

OFFICIAL:

E. M. WEAVER,
Colonel, General Staff Corps,
Assistant to the Chief of Staff.
Chief of Division.

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An excellent review of Major P. T. Straub's recent book, entitled "Medical Service in Campaign," appears in an Indian Medical Gazette of November, 1910. The reviewer says, among other favorable comments: "We know of no other book in the English language which is so instructive or useful to the military medical officer."

Contract Surgeon William H. Ramsey, U. S. Army, who has for several years been the attending surgeon at Army headquarters, Omaha, Neb., died January 14, 1911, cause unknown. Dr. Ramsey was a member of the Medical Reserve Corps, inactive list.

The order returning Captain P. W. Huntington, Medical Corps, to the United States on the January 15th transport has been revoked, and Captain Huntington will remain on duty in the Philippines for the time being. He is doing duty with the civil government and is the medical adviser in the organization of the Coast Guards.

1st Lieutenant Donald P. McCord, Medical Reserve Corps, has reported for duty at Fort George Wright, Wash.

Major William M. Roberts, Medical Corps, who has been on an extended leave, which he spent in South Africa, has returned to his station, Fort Thomas, Ky. Major Roberts has submitted a very interesting report to the Surgeon General covering his investigations in South Africa.

By recent orders Lieutenant Colonel Charles M. Gandy, Medical Corps, will sail for the Philippines March 5, 1911.

The bill to increase the Medical Corps of the Army, approved April 23, 1908,| became fully operative on January 1, 1911. The provisions of this bill call for the promotion of a certain number of Lieutenant Colonels, Majors and Captains each year and the admission to the corps of not to exceed 25 per cent of the total increase in the grade of First Lieutenants each calendar year. On January 1 three Majors were advanced to the grade of Lieutenant Colonel and six Captains to the grade of Major. In addition to this the usual promotions were made by the retirement of Colonel Joseph B. Girard on December 26, 1910, and Colonel John M. Banister on December 31, 1910.

Captain Herbert M. Smith, Medical Corps, was honorably discharged from the service with one year's pay on January 5, 1911. Captain Smith failed to qualify in his examination for promotion to the grade of Major.

Captain Henry D. Thomason, Medical Corps, is on a month's leave of absence, which he is spending in Cuba.

1st Lieutenant D. S. Conner, Medical Reserve Corps, a student at the Army Medical School, resigned his commission December 21, 1910.

Colonel Blair D. Taylor, Medical Corps, availed himself of a four months' leave of absence on January 1. Colonel Taylor will retire, after more than 35 years of service, on April 30, 1911.

Colonel R. G. Ebert, Medical Corps, has been relieved from duty as Chief Surgeon, Department of the Columbia, and been assigned to duty as Chief Surgeon, Department of California. Colonel Ebert will assume his new duties on the 1st of March.

Colonel William H. Arthur, Medical Corps, has been granted a three months' leave of absence to take effect about April 20.

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1st Lieutenant Albert L. Miller, Medical Reserve Corps, who has been on duty at Fort Meade, S. Dak., for several years, has been granted a leave of absence to take effect about February 1 and at the expiration of this leave will be recalled from active service. This change is made at the request of Lieutenant Miller.

Major William J. L. Lyster, Medical Corps, has been assigned to temporary duty as Attending Surgeon in Philadelphia. Major Lyster is taking a special course in public health, which he will complete about June 1.

The midwinter examinations at the Army Medical School have been completed, but the result has not yet been announced.

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VOL. XXVIII, No. 3 MARCH, 1911

The Military Surgeon

Original Articles.

AUTHORS ALONE ARE RESPONSIBLE FOR THE OPINIONS EXPRESSED IN THEIR CONTRIBUTIONS.

BLANK FORMS FOR THE INTERNAL ADMINISTRATION OF ARMY GENERAL HOSPITALS.

By Major Thos. L. Rhoads, Medical Corps, U. S. Army.

GENERAL Hospitals in the United States Army are military institutions of less than one hundred to upwards of one thousand beds capacity, having the administrative and professional departments thoroughly organized for the collaboration of records pertaining to the patients and to the staff personnel, for the collection and distribution of supplies, for the handling of transportation, and for the care of the sick and injured by the best approved methods. These hospitals are under the exclusive control of the Surgeon General of the Army, and are governed by regulations prescribed by the Secretary of War, the senior medical officer on duty at the hospital exercising command.

General Hospitals are organized for a various number of purposes, among these being:

1. For the observation, treatment and final disposition of obscure cases that have resisted treatment under the facilities usually afforded at post Hospitals.

2. For the performance of special operations and operations of magnitude that could not ordinarily be performed at hospitals less generously equipped.

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3. For the treatment of officers and enlisted men who are not attached to military posts, and of retired officers and enlisted men, and when practicable, their families.

4. For the investigation and report upon new therapeutic measures and appliances.

5. For the assistance of the civil authorities in times of public calamity or great disaster.

In time of war the purposes of General Hospitals are further extended to include:

1. The care of the sick and wounded left behind by a mobile army as troops are advanced.

2. The relief of overcrowded base and stationary hospitals after severe engagements, and the treatment and final disposition of patients transferred from these hospitals on account of the severity of their illnesses or injuries.

When the nation is at peace but a limited number of General Hospitals are required for the fulfillment of the aforementioned purposes; there are at present but four such hospitals in the military service;* but in time of war their number of necessity will become materially increased, and even in so short a campaign as the Spanish-American War it became necessary to establish eighteen General Hospitals for the care of the sick and wounded of that conflict. During the four years' war between the States, 499 General Hospitals were established in the union army throughout the country, some of them having more than three thousand patients under treatment at one time. It thus happens that, without special preliminary experience in the organization of General Hospitals, a medical officer may be suddenly called upon to establish a General Hospital of considerable capacity, and while the major questions relating to its establishment will be set forth in regulations covering essential points, the internal administration will be left to the resource of the officer assuming command. Accordingly some months may be required to work out the details of the administration of the newly established plant.

In order to facilitate this work of organization the following set of blank forms, compiled during my service as Adjutant at the

*The Walter Reed General Hospital, Takoma Park, D. C.
The U. S. A. General Hospital, Presidio of San Francisco, Cal.
The U. S. A. General Hospital, Fort Bayard, N. M.
The Army & Navy General Hospital, Hot Springs, Ark.

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Walter Reed General Hospital, are here presented as helpful aids.

These forms have been in use in this hospital for the past year, and have satisfactorily answered the purpose for which they are intended. Each form bears a name designating its purpose, and but two sizes of blanks are used,—a card index size and a standard folded-letter size,—making them suitable for filing.

Note.—Each blank form is surrounded by a ruled border in this article merely to show the size of the paper blanks.

WALTER REED GENERAL HOSPITAL,

TAKOMA PARK, D. C.

ADMISSION CARD.

_____, 19____

SURNAME _____ CHRISTIAN NAME _____

RANK _____ COMPANY _____ ORGANIZATION _____

WARD _____ DIET _____ BATH _____

Patients desiring to deposit money, jewelry, or other valuables in the safe, will deliver same to the Officer of the Day or to the Ward Surgeon.

_____

Medical Corps, U. S. Army,
OFFICER OF THE DAY.

FORM 1.

Digitized by Google

WALTER REED GENERAL HOSPITAL,

TAKOMA PARK, D. C.

CERTIFICATE OF DEPOSIT.

_____, 19____

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

has deposited in the hospital safe, at his own risk: .....

.....

This certificate is not transferable.

Medical Corps, U. S. Army,
ADJUTANT.

FORM 16.

PLACE

WALTER REED GENERAL HOSPITAL,
TAKOMA PARK, D. C.

DATE

SURNAME CHRISTIAN NAME RANK COMPANY ORGANIZATION

AGE RACE BIRTHPLACE YEARS SERVICE

ADMISSION DATE SOURCE

NAME AND ADDRESS OF NEAREST RELATIVE

DISPOSITION DATE

METHOD

REGISTER NUMBER

HOSPITAL CORPS, U. S. A., WARDMASTER.

(TO BE FILLED OUT AND SENT TO RECORD OFFICE ON RECEIVING PATIENT.)

FORM 2.

Digitized by Google

PLACE | **WALTER REED GENERAL HOSPITAL,** TAKOMA PARK, D. C. | DATE

REQUEST FOR TRANSFER OF PATIENT.

SURNAME	CHRISTIAN NAME	RANK	COMPANY	ORGANIZATION

DESTINATION:

Medical Corps, U. S. Army,
WARD SURGEON.

Authorized: By order of the Commanding Officer.

Medical Corps, U. S. Army,
ADJUTANT.

FORM 87.

PLACE | **WALTER REED GENERAL HOSPITAL,** TAKOMA PARK, D. C. | DATE

PATIENTS REQUIRING SPECIAL ATTENTION.

Bed No.	Remarks.

To be delivered to the Officer of the Day before 5 p.m. daily.

Medical Corps, U. S. Army,
WARD SURGEON.

FORM 48.

Digitized by Google

PLACE | **WALTER REED GENERAL HOSPITAL,** | DATE
TAKOMA PARK, D. C.

PATIENTS RECOMMENDED FOR RETURN TO DUTY.

SURNAME	CHRISTIAN NAME	RANK	COMPANY	ORGANIZATION

Medical Corps, U. S. Army.
Ward Surgeon.

FORM 11

PLACE | **WALTER REED GENERAL HOSPITAL,** | DATE
TAKOMA PARK, D. C.

NOTIFICATION OF DEATH.

TO BE SENT TO THE ADJUTANT WITHOUT DELAY.

SURNAME	CHRISTIAN NAME	RANK	COMPANY	ORGANIZATION

DIED ____ O'CLOCK ____ M., THIS DATE. NECROPSY IS ____ DESIRED.

Immediate cause of death:

Medical Corps, U. S. Army,
WARD SURGEON.

FORM 85.

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WALTER REED GENERAL HOSPITAL,

TAKOMA PARK, D. C.

MEDICINE CHARGES.

_____ 19__

_____ Dr.,

Invalided _____ days at 25 cents a day (A. R. 1478); Due $_____

Make checks payable to
Walter Reed General Hospital.

Received Payment,

_____

Medical Corps, U. S. Army,
PROPERTY OFFICER.

FORM 42.

WALTER REED GENERAL HOSPITAL,

TAKOMA PARK, D. C.

SUBSISTENCE CHARGES.

_____ 19____

_____ Dr.,

Subsisted _____ days at _____ a day (A. R. 1478); Due $_____

Make checks payable to
Walter Reed General Hospital.

Received Payment,

_____

Medical Corps, U. S. Army,
IN CHARGE HOSPITAL FUND.

FORM 41.

Digitized by Google

PLACE | DATE

WALTER REED GENERAL HOSPITAL
TAKOMA PARK, D. C.

PATIENTS' PROPERTY.

SURNAME | CHRISTIAN NAME

RANK | COMPANY | ORGANIZATION

PUBLIC PROPERTY.	No.	PERSONAL PROPERTY.	No.
Rifle		Belts, waist	
Rifle scabbard		Blankets	
Gun sling		Breeches	
Cartridge belt		Caps	
Cartridge belt suspenders		Coats	
Cartridge box		Cords, breast	
Bayonet		Cords, hat	
Bayonet scabbard		Collars	
Revolver		Drawers	
Revolver holster		Gauntlets	
Revolver cartridge box		Gloves	
Revolver lanyard		Handkerchiefs	
Saber and scabbard		Hats	
Sword and scabbard		Housewife	
Saber knot		Leggins	
Saber belt		Neckties	
Saber straps		Overcoats	
H. C. knife and scabbard		Overshoes	
Spurs		Pajama drawers	
Spur straps		Pajama shirts	
Waist belt		Ponchos	
First aid packet		Shirts, flannel	
Pouch, first aid packet		Shirts, muslin	
Haversack		Shoes, black	
Haversack strap		Shoes, russet	
Canteen		Stockings	
Canteen strap		Towels	
Canteen-haversack strap		Trousers	
Knapsack		Undershirts	
Blanket roll straps			
Shelter tent half			
Shelter tent poles			
Shelter tent pins			
Meat can			
Cup			
Knife			
Fork			
Spoon			

PROPERTY VERIFIED AND TRANSFERRED TO STORE ROOM.

HOSPITAL CORPS, U. S. ARMY, WARDMASTER.

STORE ROOM NO. _____ LOCKER NO. _____

PROPERTY RETURNED _____, 19____

FORM 98. SIGNATURE OF PATIENT ON RETURN OF PROPERTY.

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PLACE | WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C. | DATE

MORNING REPORT OF PATIENTS.

Remaining last report	
Admitted	
Transferred from other wards	
Total	
Duty	
Discharged	
Died	
Transferred to other wards	
Otherwise disposed of	
Remaining	
Total	

EMPTY BEDS

Changes by name, rank and organization:

HOSPITAL CORPS, U. S. ARMY,
WARDMASTER.

FORM 6.

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PLACE

WALTER REED
GENERAL HOSPITAL
TAKOMA PARK, D. C.

DATE

DIAGNOSIS CARD.

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

DIAGNOSIS

IN LINE OF DUTY: YES. NO.

COMPLICATION, SEQUELAE, ETC.,

IN LINE OF DUTY: YES. NO.

Medical Corps, U. S. Army,
WARD SURGEON.

FORM 4.

Digitized by Google

PLACE

WALTER REED GENERAL HOSPITAL
TAKOMA PARK, D. C.

DATE

TREATMENT CARD.

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

DATE	REGULAR.

	SPECIAL.

Medical Corps, U. S. Army.
WARD SURGEON.

FORM 7.

Digitized by Google

PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

OPERATION REPORT.

SURNAME	CHRISTIAN NAME

RANK	COMPANY	ORGANIZATION

DIAGNOSIS

OPERATION

Anesthetic used .....

Administration of anesthetic begun .....

Administration of anesthetic ended .....

Operation begun .....

Operation ended .....

Anesthetizer .....

Operator .....

Medical Corps, U. S. Army,
IN CHARGE OF OPERATING ROOM.

FORM 9.

Digitized by Google

PLACE | DATE

WALTER REED
GENERAL HOSPITAL
TAKOMA PARK, D. C.

REPORT ON EYES.

SURNAME | CHRISTIAN NAME

RANK | COMPANY | ORGANIZATION

RIGHT EYE.

Ocular Disease: _____

Treatment: _____

_____

Motility: _____

Refraction:

Vision ——— corrected to ——— by

_____

Fundus: _____

_____

LEFT EYE.

Ocular Disease: _____

Treatment: _____

_____

Motility: _____

Refraction:

Vision ——— corrected to ——— by

_____

Fundus: _____

_____

Medical Corps, U. S. Army.
OPHTHALMIC SURGEON.

FORM 24.

Digitized by Google

PLACE | WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C. | DATE

REPORT ON NOSE, THROAT AND EARS.

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

ANTERIOR NARES.

POSTERIOR NARES.

PHARYNX and LARYNX.

RIGHT EAR.

LEFT EAR.

HEARING. Distance.....Feet.

	Watch	Whisper	Forced Whisper	Ordinary Voice	Loud Voice
Right Ear:					
Left Ear:					

Medical Corps, U. S. Army.
NASAL AND AURAL SURGEON.

FORM 86.

Digitized by Google

PLACE

WALTER REED
GENERAL HOSPITAL
TAKOMA PARK, D. C.

DATE

RADIOGRAPHIC REPORT.

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

Previous radiographic history:

Region radiographed ---

View ---

FINDINGS

Print attached ---

Amperage ---

Milliamperage ---

Distance from tube ---

Length of exposure ---seconds.

No. of tube --- Plate No. ---

Medical Corps, U. S. Army,
RADIOGRAPHER.

FORM 88.

Digitized by Google

PLACE | WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C. | DATE

REPORT ON BLOOD.

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

MALARIA.

Tertian_____

Quartan _____

Estivo-Autumnal _____

SERUM REACTION.

Typhoid Fever_____

Malta Fever_____

Specific Dysentery_____

Lues_____

BLOOD COUNT.

Red Corpuscles_____

White Corpuscles_____

DIFFERENTIAL COUNT.

Polymorphonuclears_____	Nuclears_____
Polymorphoneutrophiles_____	Myelocytes _____
Eosinophiles _____	Mastcells _____
Transitionals_____	Normoblasts _____
Large Mononuclears_____	Megaloblasts_____
Small Mononuclears_____	

HEMOGLOBIN, PER CENT_____

COAGULATION TIME_____

CULTURE _____

_____

MISCELLANEOUS_____

_____

_____

Medical Corps, U. S. Army,
IN CHARGE OF LABORATORY.

FORM 84.

Digitized by Google

PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

REPORT ON SPUTUM.

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

Quantity (in 24 hours) _____

Color _____

Odor _____

Character _____

Consistence _____

Reaction _____

Blood _____

Sediment _____

Parasites _____

Tubercle bacilli _____

_____

_____

_____

Crystals _____

_____

Cells _____

_____

Ova _____

_____

Miscellaneous _____

_____

_____

_____

Medical Corps, U. S. Army,
IN CHARGE OF LABORATORY.

FORM 21.

Digitized by Google

PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

REPORT ON URINE.

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

Volume (in 24 hours) _____

Color _____

Appearance _____

Reaction _____

Specific Gravity _____

Albumin _____

_____

Sugar _____

_____

Acetone _____

Diacetic Acid _____

Urea (in 24 hours) _____

Sediment _____

_____

Microscopical Examination _____

Mucus _____

Pus _____

Blood _____

Casts _____

Epithelia _____

Bacteria _____

Crystals _____

Amorphous deposit _____

Medical Corps, U. S. Army,
IN CHARGE OF LABORATORY.

FORM 10.

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PLACE | WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C. | DATE

REPORT ON FECES.

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

Color _____

Character _____

Consistence _____

Reaction _____

Mucus _____

Blood, free _____

Membranes _____

Undigested Food _____

_____

Parasites _____

Bacteria _____

_____

Fungi _____

_____

Vermes or Ova _____

_____

Infusoria _____

_____

Rhizopoda _____

_____

Red Blood Cells _____

White Blood Cells _____

Epithelium _____

_____

Crystals _____

_____

Miscellaneous _____

_____

_____

Medical Corps, U. S. Army,
IN CHARGE OF LABORATORY.

FORM 88.

Digitized by Google

PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

REPORT ON STOMACH CONTENTS.

SURNAME	CHRISTIAN NAME

RANK	COMPANY	ORGANIZATION

Total Acidity_____

Combined Acids_____

Hydrochloric Acid_____

Lactic Acid_____

Pepsin _____

Milk curdling Ferment_____

Blood, gross_____

Blood, occult_____

Mucous, amount _____

Bile_____

Fecal matter_____

Parasites _____

_____

_____

_____

_____

_____

_____

_____

Medical Corps, U. S. Army,
IN CHARGE OF LABORATORY.

FORM 88.

Digitized by Google

PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

LABORATORY REPORT.—MISCELLANEOUS.

SURNAME CHRISTIAN NAME

RANK COMPANY ORGANIZATION

SPECIMEN FROM

Medical Corps, U. S. Army.
IN CHARGE OF LABORATORY.

FORM 80.

Digitized by Google

PLACE

WALTER REED
GENERAL HOSPITAL
TAKOMA PARK, D. C.

DATE

PROPERTY REQUEST.

ARTICLES: To be furnished. To be exchanged.	NO.

Medical Corps, U. S. Army.

APPROVED FOR ISSUE.

Medical Corps, U. S. Army,
PROPERTY OFFICER.

FORM 8.

Digitized by Google

PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

PROPERTY TRANSFER.

RECEIVED FROM (PLACE)_____

BY DIRECTION OF_____

THE FOLLOWING PROPERTY:

ARTICLES.	No.

TO BE SIGNED IN DUPLICATE.

_____

HOSPITAL CORPS U S ARMY

FORM 81.

Digitized by Google

PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

REPAIRS REQUEST.

To the Quartermaster:

The following repairs are needed:

Medical Corps, U. S. Army.

APPROVED: REFERRED TO _____ FOR COMPLIANCE.

Medical Corps, U. S. Army.
QUARTERMASTER.

FORM 80.

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PLACE

WALTER REED
GENERAL HOSPITAL
TAKOMA PARK, D. C.

DATE

LAUNDRY LIST.

ARTICLES	No. pieces sent out	No. pieces returned
Aprons		
Bandages		
Bath Mats		
Blankets		
Caps		
Coats, duck		
Coats, operating		
Coats, pajama		
Gowns, dressing		
Gowns, operating		
Napkins		
Night Shirts		
Pillow Cases		
Quilts		
Sheets, cotton		
Sheets, linen		
Table Cloths		
Towels, bath		
Towels, hand		
Towels, kitchen		
Towels, operating		
Trousers, duck		
Trousers, operating		
Trousers, pajama		

HOSPITAL CORPS, U. S. ARMY.

FORM 16.

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PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

PERSONAL EQUIPMENT RECEIPT.

No.	ARTICLES	Remarks
.....	Emergency Case.....	.....
.....	Orderly Pouch.....	.....
.....	Hospital Corps Pouch.....	.....
.....	Card Holder for Bedstead.....	.....
.....	Cot	.....
.....	Locker	.....
.....	Mosquito Bar.....	.....
.....	Overcoat	.....
.....	Barrack Bag.....	.....
.....	Shelter Tent Half.....	.....
.....	Shelter Tent Poles.....	.....
.....	Shelter Tent Pins.....	.....
.....	Sheets	.....
.....	Pillow	.....
.....	Pillow Cases.....	.....
.....	Mattress	.....
.....	Mattress Covers.....	.....
.....	Blanket Roll Strap.....	.....
.....	Hospital Corps Knife.....	.....
.....	Scabbard	.....
.....	Revolver, caliber.....	.....
.....	Holster	.....
.....	Haversack.....	.....
.....	Haversack Strap.....	.....
.....	Canteen	.....
.....	Canteen Strap.....	.....
.....	Meat Can.....	.....
.....	Tin Cup.....	.....
.....	Knife	.....
.....	Fork	.....
.....	Spoon.....	.....
.....	Waist Belt.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

TO BE SIGNED IN DUPLICATE.

HOSPITAL CORPS, U. S. ARMY.

FORM 99.

Digitized by Google

PLACE

WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.

DATE

CLOTHING REQUEST.

No.	ARTICLES	Size	No.	ARTICLES	Size
---	Belts, waist	---	---	Leggins ____prs	---
---	Blankets, wool, heavy	---	---	Letters	---
---	Blankets, wool, light	---	---	Letters, U. S., br'nze, each	---
---	Breeches, khaki, foot	---	---	Letters, U. S., gilt ___each	---
---	Breeches, khaki, mount'd	---	---	Neckties, black silk	---
---	Breeches, O. D., foot	---	---	Ornam'ts, devices, metal	---
---	Breeches, O. D., mount'd	---	---	Ornam'ts, cap, bronze	---
---	Caps, dress	---	---	Ornam'ts, cap, gilt	---
---	Caps, khaki	---	---	Ornam'ts, c. collar, br'nze	---
---	Caps, O. D	---	---	Ornam'ts, c. collar, gilt	---
---	Caps, white	---	---	Overcoats	---
---	Caps, winter	---	---	Overshoes	---
---	Cap bands, extra	---	---	Pajamas, drawers	---
---	Chevrons, dress ____prs	---	---	Pajamas, shirts	---
---	Chevrons, khaki ____prs	---	---	Ponchos	---
---	Chevrons, O. D ____prs	---	---	Shirts, flannel blue	---
---	Chevrons, white ____prs	---	---	Shirts, flannel O. D	---
---	Chevrons, devices ___prs	---	---	Shirts, muslin	---
---	Coats, fatigue	---	---	Shoes, black, dress ___prs	---
---	Coats, dress	---	---	Shoes, gymnasium ___prs	---
---	Coats, service, khaki	---	---	Shoes, gar'n, russet ___prs	---
---	Coats, service, O. D	---	---	Shoes, russet, m'ch'g ___prs	---
---	Coats, white	---	---	Stockings, cotton ____prs	---
---	Cords, breast	---	---	Stockings, wool, h'vy prs	---
---	Cords, hat, service	---	---	Stockings, wool, light prs	---
---	Collars	---	---	Stripes, trousers ____prs	---
---	Drawers, C. F., winter	---	---	Studs, bone	---
---	Drawers, jean, summer	---	---	Suspenders ____prs	---
---	Gauntlets, winter ___prs	---	---	Trousers, dress, 22ozs ___prs	---
---	Gauntlets, leather ___prs	---	---	Trousers, dress, 16ozs ___prs	---
---	Gloves, horsehide ____prs	---	---	Trousers, fatigue ____prs	---
---	Gloves, cotton, white ___prs	---	---	Trousers, white ____prs	---
---	Gloves, wool, O. D ___prs	---	---	Undershirts, cotton	---
---	Hats, service	---	---	Undershirts, wool, winter	---
---	Laces, breeches ____prs	---	---	----------	---
---	Laces, leggins ____prs	---	---	----------	---
---	Laces, shoes, black ___prs	---	---	----------	---
---	Laces, shoes, m'ch'g ___prs	---	---	----------	---
---	Laces, shoes, russet ___prs	---	---	----------	---

HOSPITAL CORPS, U. S. ARMY.

FORM 25.

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WALTER REED GENERAL HOSPITAL,

TAKOMA PARK. D. C.

PATIENT'S PASS.

_____, 19____

_____

has permission to be absent from this hospital from_____to_____ this date. He will report to the non-commissioned officer in charge of quarters on leaving and on returning to the hospital.

Approved :
By order of the Commanding Officer.

_____
Medical Corps, U. S. Army.
Ward Surgeon.

_____
Medical Corps, U. S Army.
ADJUTANT.

FORM c.

WALTER REED GENERAL HOSPITAL,

TAKOMA PARK, D. C.

HOSPITAL CORPS PASS.

_____, 19_____

_____, Hospital Corps, has permission to be absent from this post from_____to_____ He will report to the non-commissioned officer in charge of quarters on leaving and on returning to the post.

Approved :
By order of the Commanding Officer.

_____
Medical Corps, U. S. Army.

_____
Medical Corps, U. S. Army,
ADJUTANT.

FORM 40.

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WALTER REED GENERAL HOSPITAL,

TAKOMA PARK, D. C.

DETAIL FOR OFFICER OF THE DAY.

_____, 19____

For duty tomorrow:

Principal: _____, Medical Corps, U. S. Army.

Alternate: _____, Med. Res. Corps, U. S. Army.

By order of the Commanding Officer.

_____

Medical Corps, U. S. Army,
ADJUTANT.

FORM 17.

WALTER REED GENERAL HOSPITAL,

TAKOMA PARK, D. C.

DETAIL FOR NON-COMMISSIONED OFFICER IN CHARGE OF QUARTERS.

For duty to-morrow: _____, 19____

Principal: _____, Hospital Corps, U. S. Army.

Alternate: _____, Hospital Corps, U. S. Army.

By order of the Commanding Officer.

_____

Medical Corps, U. S. Army,
ADJUTANT.

FORM 8.

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HOSPITAL CORPS. **WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.**

SURNAME	CHRISTIAN NAME	RANK	ENLISTMENT PERIOD

ENLISTED AT _____ DATE _____

RECRUITING OFFICER _____

RACE _____ JOINED _____

QUALIFICATIONS _____

REMARKS _____

FORM 30.

PLACE	WALTER REED GENERAL HOSPITAL, TAKOMA PARK, D. C.	DATE

DAILY DIET REQUEST.

House Diet, Officers		Soft Diet	
House Diet, Enlisted Men		Liquid Diet	
Special Diet, (on Special Diet Request)			

EXTRAS:

Medical Corps, U. S. Army,
WARD SURGEON.

FORM 12.

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PLACE

WALTER REED
GENERAL HOSPITAL
TAKOMA PARK, D. C.

DATE

SPECIAL DIET REQUEST.

TO BE RENDERED DAILY FOR INDIVIDUAL CASES.

For

ARTICLES.	B	D	S
Raw Fruit			
Stewed Fruit (Apples, Apricots, Peaches, Prunes)			
Baked Apple			
White Bread			
Hot Rolls			
Zwieback			
Crackers (soda, graham)			
Toast, dry, milk			
Cereal (Oatmeal, Cream of Wheat, Shredded Wheat)			
Eggs, raw, boiled, poached, scrambled			
Broth (chicken, mutton, beef, clam)			
Soup (vegetable, vermicelli, bean, pea, rice)			
Bacon, broiled, fried			
Fish, broiled, baked, fried			
Oysters, raw, stewed, panned			
Chicken, broiled, stewed, roasted			
Beef Steak, broiled			
Beef, roasted, corned, scraped			
Lamb Chops, broiled			
Veal Chops, fried			
Potatoes, baked, mashed			
Peas, stewed			
Rice, boiled			
Spinach, boiled			
Onions, boiled, baked			
Asparagus, boiled			
Macaroni, baked			
Tomatoes, stewed, sliced			
Lettuce, plain			
Custard, egg			
Blancmange			
Pudding (bread, cornstarch, rice, tapioca)			
Wine Jelly			
Ice Cream			
Cream			
Milk			
Buttermilk			
Chocolate			
Cocoa			
Tea			
Coffee			

Medical Corps, U. S. Army.
WARD SURGEON.

FORM 18.

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PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

HOUSE DIET, ENLISTED MEN.

BREAKFAST.

DINNER.

SUPPER.

Medical Corps, U. S. Army,
MESS OFFICER.

FORM 87.

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PLACE	WALTER REED GENERAL HOSPITAL TAKOMA PARK, D. C.	DATE

HOUSE DIET, OFFICERS.

BREAKFAST.

DINNER.

SUPPER.

Medical Corps, U. S. Army,
MESS OFFICER.

FORM 36.

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CAMP WIKOFF, MONTAUK POINT, NEW YORK, IN 1898.

By First Lieutenant Ira C. Brown, Medical Reserve Corps, U. S. A., Late Major and Brigade Surgeon, U. S. V., and Executive Officer at Camp Wikoff.

IF any one is interested in this controversy and what took place at this camp he is invited to read Major Nancrede's article in The Military Surgeon, for June, 1910, and Major Heller's article in the July number before reading what I have to say.

Though I was the executive officer criticised, be it understood that I have no personal feeling whatever in this matter and what I shall say is not intended to offend any one, nor am I offended by the article of Major Nancrede. I shall try to show that Major Nancrede has forgotten, after twelve or more years, the conditions that actually existed at the time he describes in his paper, which was delivered as an address before the Army Medical School Class at Washington, in April, 1910.

Major Nancrede arrived at Montauk August 18, 1898. On September 15th he tendered his resignation to take effect not later than September 28th. It will be observed that he was at this camp a little over one month, and left feeling very kindly toward me as the following letter shows:

"New York, *September 24, 1898.*

"My Dear Brown: You got away from mess so early that I missed the opportunity of saying good-bye to you. Do not fail to send me a copy of your report. May I beg the favor of being put among the list of your friends for the future, and should you ever come near me do not fail to extend your journey far enough to stay at my home that we may 'fight our battles over again.' Yours truly,

(Sgd.) "Chas. B. Nancrede."

It may be as well to say now as later that the introduction of private and official letters seems necessary to show that the executive officer at Montauk was more or less efficient, and that the executing of orders was the simplest part of his duties.

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I will pass over the Major's article to page 620, it is here he takes issue with me or rather where I take issue with him, to quote: "When I saw at Wikoff one hospital of nearly two thousand beds constantly filled for two weeks at a time, another division field hospital with its quota of sick, a detention hospital for contagious cases with its fair share of cases, where about four hundred men of a single western volunteer regiment were transferred to the hospital at one time, surely something must have been wrong, and I, who have seen it, should hold up such experiences as a warning for all young medical officers; think, these were not wounded men but sick men, and how many need have been ill if their medical officers had done their full duty by having learned how to care for the men and where to apply for authority needed for their proper care, which they, the medical men did not possess?

"Should it be a matter of surprise that the patients did not there do well when there was a steady stream of visitors permitted to traverse the wards, until, as one officer said to me, he felt like the animals might at a country fair, mere objects of impertinent curiosity. Whose fault was this? The appointment of a volunteer brigade surgeon as executive officer a few weeks out of his term as contract surgeon; this nomination, I regret to say, having been made by a surgeon of the Medical Corps, U. S. A. When this executive officer was remonstrated with, and asked to station sentries to prevent this noise and disturbance of the patients by sightseers, his answer was that he had such a small detail of men that he could not spare them from the duties of policing the surroundings of the hospital. When asked why he did not apply for more than fifteen or twenty half sick men, he claimed that he could not get no more, whereby he really meant that he did not know how to secure them. When told how, by a volunteer surgeon who did know his duty, he at once secured a detail of one hundred men. This man did not seem to know that, for manifest reasons, arms must not be kept in a hospital ward, and that there should be a proper place and custodians for them as government or private property, until one patient attempted suicide and an armed defiance of the guard by a crazy patient called attention to this dangerous condition of affairs.

At eight o'clock the surgeon in charge, with his executive officer went to bed, leaving orderlies, hospital stewards, (most of whom also retired to rest), nurses, etc., to work or not work, on

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their own responsibilities. No surgical officer was in charge of the ambulances, nor was there any one who practically performed the function of a medical officer of the day to give medical supervision of the large number of medical officers and patients and settle many minor but important details; while conflicting verbal orders countermanded by written ones, in turn were reversed by orders by word of mouth. Is it any wonder things went wrong? Could not this executive officer readily have learned what was his plain duty? Am I not abundantly justified in calling attention to these past conditions in order, if possible, not to have them repeated in the future, especially as I saw order evolved out of chaos inside of twenty-four hours, when two members of the permanent medical corps took matters in hand?"

Now recall that Major Nancrede twelve years after the Cuban campaign is telling the young men of his audience what should have been done in 1898. Did Major Nancrede possess all this knowledge of preventive medicine in 1898? Decidedly not. Does he recall the famous round robin of 1898, which stated that the troops were starving in Cuba? Was that the fault of the medical department? Decidedly not. Was it the fault of the medical department that medical supplies were not delivered to the troops in Cuba? No. Was it the fault of the medical department that the troops of the Fifth Corps were practically all sick? No, indeed. Does any practical man believe that a command compelled to maneuver in swamps where malaria and yellow fever mosquitoes exist by the millions day and night, is going to escape and that, the whining of some theoretical medical man will prevent infection? It is ridiculous. From Major Nancrede's remarks one is forced to conclude that the line officer knows nothing of sanitation. He didn't know very much in the past. about as much now as we did then, but you can't make me believe that he is not vitally interested in the health of his command, his success depends upon it. The line officer knows this, then why should he insist upon remaining in the swamp unless there was a necessity for it. Some medical men can't see beyond the little world they believe to be their own. So far as I am able to learn Major Nancrede has had no experience with troops since 1898. Then and now (with troops in the field) are quite a different story. A medical officer's religion at present is sanitation. To say at this time of the medical officers in the Civil War that they should have done thus and so is just as reasonable as to criticise

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men's work twelve years after with the knowledge gained in the meantime. Draw conclusions but don't attempt to make criminals of these men who did their best in the light of their knowledge.

Well, suppose we pass on, four hundred men, he says, were transferred to the hospital. That is correct but the medical department was not responsible; these men were not sick, they were hungry and exhausted for want of proper nourishment. Does the good Major recall that they were all volunteers and that about ninety per cent of the sickness at Wikoff was among volunteers? What does the Major conclude from this? The regular troops had volunteer medical officers in most instances, while in Cuba I mean; did it ever occur to him that the regular soldier knew better how to take care of himself, that he was a trained man not fresh from the farm or shop, and that any amount of advice from medical officers to volunteers will make no difference, though the regular man excels only by his training which takes time. I hope the Major did not impress his audience with the idea that they could go over the heads of all intermediate commanders with complaints. I suppose it will be news to the Major that five hundred was the maximum number of sick in the Fifth Corps in Cuba; that most of the sick were prostrated on the way up and in no way can blame for this be construed as resting upon the medical department.

To again proceed, the Major says: "Should it be a matter of surprise that patients there did not do well," this statement is really amusing when one recalls that the death rate was something less than one per cent. I venture to say that the Major can't support his statements regarding the visitors. There were many, it is true; some were admitted by my authority, some ran the guard, some got in with a pass from the Commanding General. Those admitted by me were relatives whom I had telegraphed for. I have no hesitancy in admitting this nor of stating I would do the same again. Those admitted by the Commanding General were very few in number and when I spoke to him asking that all go through my office he made no objection. Volunteers were doing sentry duty and were not over strict, hence many got past. I knew it and the sentries were reprimanded according to approved methods. That all the good women who got inside were not sightseers is evident from the following conversation which I overheard while making my rounds. A woman with a splendid motherly face was outside a tent holding a bottle

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of cologne in one hand and a comb and brush in the other. She said to a soldier in the end cot: "My dear, isn't there something I can do for you?" The youngster replied: "No, thank you, the doctor was just here and he said I was doing all right and would get well." The woman replied: "Can't I comb your hair?" and he says: "Oh yes, but that will be the eighth time today."

When we were able to have our guard from regular troops conditions improved at once. Before dismissing the question of the guard which Major Nancrede seems to think I was responsible for, I want to say the guard was commanded by Captain Chase, 3rd U. S. Cavalry, now colonel and inspector general. Captain Chase was provost marshal and there can be no harm in my repeating what I have often said, that never have I seen a better guard. The Major says he remonstrated with me regarding this guard question; he is mistaken. Just a few days before he left for home he sent me the following letter:

"CAMP WIKOFF, *Sept. 5, 1898.*

"MAJOR I. C. BROWN,

"Executive Officer, U. S. General Hospital.

"SIR: I have the honor to call your attention to the complaints received from patients in 'I' ward as to the serious annoyance from the visitors admitted to said ward. I would respectfully urge that measures be taken to abate this nuisance.

"Respectfully,

(Sgd.) "C. B. NANCREDE.
"Major & Chief Surgeon, U. S. V."

I investigated the case—this was the officers' ward, by the way—if any one ever saw an officers' ward satisfied I want to know how it happened. The result of the investigation was as follows: There was a cranky old bachelor in the ward who hated everything and everybody, including himself and myself. There was also a poor woman with her son, a young lieutenant who died, and this poor woman accused me of killing him. It became a fixed idea with her, she got so she told everybody. Likewise, there were other women, wives of officers who did them a whole lot of good. Well, these were the visitors. Would I admit them again under like circumstances? Without a doubt.

In a word, the records show that guards were furnished as fast as possible. The Major says one hundred men were asked for,

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the facts are we had one full battalion as a guard. This was asked for at once and came as fast as possible. I knew this but didn't think to mention it to Mjor Nancrede, in fact, we had at one time a large part of the 9th Cavalry. Those who knew Captain Chase know the guard was sufficiently well organized and splendidly conducted. I don't recall the armed crazy man mentioned by Major Nancrede but presume his statement is correct in this particular. If so, it was the fault of the surgeon in charge of the ward, for orders had been issued at first that all arms should be turned in to the ordnance officer, (Captain McMillon) with name of soldier, number of piece and its condition recorded. Hundreds were turned in. I can't deny the above statement of Major Nancrede but I do deny that a proper place was not provided for the safe keeping of all arms and ammunition—this is a matter of record.

"At eight o'clock the surgeon and his executive went to bed." Great God, what a sin! They also left on duty orderlies, hospital stewards and nurses; how foolish. I wonder where the one hundred and nineteen medical officers were, they also went to bed, I suppose, poor devils, I hope so, they worked hard enough to earn anything in reason. As a matter of fact, this is what happened; the surgeon in charge went to bed anytime he felt so disposed and his executive did likewise. Sometimes it was seven o'clock and from that on until 1:00 a. m. There were the two medical officers of the day, one at the main hospital and one at the annex. They were not required to sit up all night but were required to do as most internes have always done, sleep where the nurses could find them. These officers of the day were run by roster; there were no majors on the roster because it was not the custom of the service then, or now. That may account for the Major not knowing the circumstances. The nurses and ward masters were on duty part day and part night according to the usual practice in all hospitals. Would I conduct matters in this respect in the same if I had it to do over again? Exactly the same. I went with the officer of the day one and sometimes two of his rounds to catch the first and second reliefs. Sometimes the surgeon in charge went with us but I always went and never, at least I don't recall ever having seen Major Nancrede about at this hour.

The Major charges that no surgeon was in charge of the ambulance train. This on a par with the other statements made re-

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garding things he imagines he saw. There were two surgeons and a general officer in charge of the ambulance train. Dr. Jones at the wharf was constantly in attendance and Captain Winter at the hospital; General Williston personally rode over the two and one-half miles from wharf to hospital, to look after the ambulances. Once we had twenty ambulances but this number was reduced to six by one thing and another breaking and there being no way of repairing or securing new parts promptly. Was the medical department responsible for quartermaster property? Of course not. I recall a telephone conversation I had with Dr. Jones, who was at the wharf, regarding the ambulance train. He told me he could not do certain things and that General Williston had ordered so and so. I replied that I didn't care a damn, to go ahead and do as I told him. Someone in my office said "What's that?" I looked around and there sat General Williston. My apologies were plenty and profuse, and he replied, "Don't let that worry you. I have said damn Major Brown many times." The question at issue was a misunderstanding on the part of Dr. Jones and not a question of fact between the General and myself. This little incident was the beginning of a warm friendship between General Williston and me that still exists. While upon the subject I hope any who may chance to read this will then look up General Williston's record. Young men who want something to inspire them can find nothing better. Try to imagine if you can such a man permitting an incompetent executive officer to retain an office of such vast responsibilities, responsibilities greater than my critic has the slightest conception of. Major General S. B. M. Young was about the hospital many times a day, and to him our wants were freely communicated; he being in command, and perfectly familiar with conditions, can it be imagined bad ones continued one moment longer than necessary? Of course not.

The trouble was Major Nancrede was a very small toad in a very large puddle. I think one of the most laughable statements made by Major Nancrede was that I did not take time to master the regulations. Everyone familiar with conditions at Wikoff knows that to have applied regulations there would have brought things to a standstill. The Secretary of War knew this for he issued an order to disregard regulations when they did not tend to expedite matters. Recall, if you please, that Major Nancrede arrived at the hospital August 18th. At the same time, Dr. J. H.

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Burtenshaw of New York arrived, not in any way connected with the Army but as a critic and he published his conclusions August 20th, and said: "The general hospital is located on a broad plateau overlooking the ocean on the south, and the rolling hills of Montauk on the north. * * * Too much praise cannot be given to Colonel Forwood and Dr. Ira C. Brown for having overcome difficulties which would have staggered men of less force and ability, for in less than one week they planned and erected the largest and most complete hospital of its kind seen in this country. Dr. Brown who was surgeon of the 6th cavalry regiment before being detailed to duty at the general hospital, recently brought thirty-five sick troopers from Tampa to Montauk in a freight car devoid of comforts or conveniences, most of them being ill with typhoid fever, and landed his patients at the camp in better condition than when they started. * * * The arrangement of the hospital is admirable in every respect, and it will indeed be a very sick patient who is not quickly restored to health and vigor under the influences of these surroundings. * * * Each ward and bed in the hospital is numbered and an index list of all patients is kept by Dr. Brown, a morning and evening report is made to him by the assistant surgeons of the condition of every patient in the wards and these reports are filed for future reference. An ambulance bearing a sick or wounded soldier is driven to the executive officer at the end of the row and, if practicable, the patient's history is taken by one of the assistants, and he is then carried to one of the wards on a stretcher. * * * It is not likely that a patrol will be established around the quarters of the general hospital as this is unnecessary, but care will be taken that patients are not fatigued by too much attention on the part of visitors and the hours at which they will be admitted will be limited. * * * When I asked Colonel Forwood if anything else was needed his reply was characteristic, "If we were to accept all offers of assistance" he said "we would have to put up a storehouse as big as the hospital itself. We want the New York daily papers, the magazines and the pictorial weeklies—all these and more, but we don't want any more jam and pajamas. The commissary tents, medical supply tents, and even the tents of the officers are bulging with jam and pajamas, and still they come by every train." * * * "Miss Helen Gould has supplied the patients with an unlimited supply of mineral water and has given Dr. Brown atuhority to order anything else that may be needed

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at her expense. * * * At the present time the working staff of the general hospital, in addition to Colonel Forwood and Dr. Brown, is made up of three very efficient acting assistant surgeons, Doctors F. G. Jones, C. E. Moore and Moons; thirty-one orderlies, one steward, one assistant steward, one cook and one assistant cook, one hundred additional orderlies have been asked for, and the kitchen force will also be increased. Dr. Brown has proved himself such a capable and painstaking officer that the wisdom shown in his selection for the important post is very apparent"—Medical News, August 20th, 1898. Keep in mind that "The volunteer who did know his duty" mentioned in Nancrede's article told me how to secure these one hundred additional men. They were asked for before Major Nancrede arrived at the hospital.

Dr. William Broadus Pritchard of New York, twenty days later wrote a letter—Medical News, September 10th, 1898, entitled, "A True Pen-Picture of Camp Wikoff." "Armed with numerous letters of introduction as the special representative of the Medical News, I visited Camp Wikoff, at Montauk Point, on Sunday last, and I spent the entire day in observation and investigation regarding the general situation, and especially with reference to the health and comfort of the soldiers. My letters of introduction were in every instance acknowledged most courtesly, and I was offered every facility for observation and the acquisition of information in detail. All questions were answered frankly and without evasion, and in not a single instance within my knowledge was any attempt made to conceal or disguise the truth. So uniform and conspicuous was this exhibition of courtesy and frankness as to deserve more than passing mention. It affords a guarantee of the accuracy of the information obtained and the facts observed which are herewith submitted. * * *

"*The Sick at Camp Wikoff.*—There are about 20,000 troops at Camp Wikoff, of this number about 10,000 are sick. This is the estimate, roughly approximated, as stated by Surgeon-Major Brown. The sick are officially classified under three heads, (1) those who are dangerously ill, who are in the general hospital or the detention hospital; (2) convalescents, who are also in the general hospital or who are discharged on furloughs and leave the Camp altogether, and (3) walking cases, or "Office patients," so to speak, who are not ill enough to go to bed or to the hospital but who are not well enough for regular duty. * * * Regarding

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possible infection of the water supply, Major Brown, when asked as to the possibility of typhoid infection from this and other sources, such as dust from the roadway, soil pollution on the surface, fly infection from the latrines, etc., stated that every intelligent precaution is being observed to guard against such sources of possible dangers. Disinfectants are in use everywhere throughout the Camps, in latrines, and especially in the hospital wards and streets. Flies are not numerous, a fact which I personally noted. Surface-soil pollution has been provided against by orders, violation of which is met with immediate arrest and imprisonment. A laborer was under arrest at the time of my visit for just such an offense.

"*Hospital Facilities.*—There are two hospitals in Camp, the general and the detention. The general hospital as it exists today is a marvel of perfection, and reflects the highest credit upon the efficiency of Colonel Forwood who planned its arrangements and carried out personally its establishment and equipment. To those unfamiliar with the difficulties and obstacles encountered a full appreciation of the success attained is impossible but even the most captious can find today little if anything to criticise or condemn. Colonel Forwood has been most ably and energetically aided in the entire work by Surgeon-Major Ira C. Brown, in my humble opinion the hardest worked and most patient bearer of many burdens in all Camp Wikoff. I sat in Major Brown's tent for nearly two hours, and during that time by actual count he transacted business with forty-seven different people. A mother wished to find her sick soldier boy; a newspaper reporter wanted a bit of information; a nurse or orderly brought an order to be signed for medicines or delicacies for the sick; a sick furlough was wanted by one; another wanted a permit to remove one of the dead—so they came one after another, and sometimes several at once, all were treated courteously, every requisition for the sick was granted at once, there was no abruptness or impatience of manner or speech. I found myself wondering again and again how it could possibly be done. Incidentally, Major Brown found time in the occasional intervals to give me much information of interest and value. The hospital, he said, was fully equipped with physicians and nurses. * * * Major Brown spoke very appreciatively of the work done and the aid rendered by the Red Cross Society and the Womans' National War Relief Association, not

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the slightest trace of official jealousy was apparent; on the contrary, his tribute was most generous and frank." * * *

In the same issue is an article by Frank Donaldson, M. D., Assistant Surgeon, U. S. V., entitled "A Refutation of the False Statements Concerning Camp Wikoff." He covers pretty much the same ground as Dr. Pritchard. He says, "I have never seen anyone neglected. I have seen distracted parents and friends bitterly complaining that they could not find some sick man. For this Dr. Forwood and Dr. Brown have been abominably abused. The parents and friends did not know that many men have been brought to Dr. Forwood and to Dr. Brown either totally or partially unconscious and without even a piece of paper to establish their identity. * * *

"*As to the Death Rate.*—This has been grossly and shamefully exaggerated. Up to 3:00 p. m. Sunday, September 3rd, 6,040 cases had been received. Up to the same hour there had been 150 deaths; making a death rate of exactly two and one-half per cent. Surely this should satisfy even the most fault finding; it is very small in any case, but incredibly small when the condition of the men when received is considered, and bears a striking tribute to the care received in the hospital." * * *

Don't forget the round robin sent from Cuba and what it said, "This army must be moved at once or perish," and was this the fault of the medical department? Never.

The reports of these medical gentlemen might be supplemented by more than one hundred press articles but they all cover practically the same ground, and there is no need of duplication; they are a part of the records, however, and in my possession. I only desire to offer a few of the many letters in my possession bearing upon the executive officer.

"OYSTER BAY, L. I., N. Y.,
"September 27, 1898.

"To the Surgeon General, U. S. Army.

"SIR: During my stay at Camp Wikoff I was continually thrown in contact with Major Ira C. Brown, and I cannot speak too highly of the energy, executive ability and hearty good will which he showed. I earnestly hope for the sake of the army, that he can be continued in it.

"Very truly yours,

(Sgd.) "THEODORE ROOSEVELT."

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"HEADQUARTERS CAVALRY DIVISION,
"CAMP WIKOFF, MONTAUK POINT, L. I., *Sept. 25, 1898.*

"Surgeon General, U. S. Army,
"Washington, D. C.

"SIR: It gives me great pleasure to say that the services of Major Ira C. Brown, of the medical department, Camp Wikoff, Long Island, were creditable to a high degree; and I would respectfully recommend that he be permanently retained in the service.

"Very respectfully,

(Sgd.) "JOS. WHEELER,
"Major-General, U. S. V."

"HEADQUARTERS 1ST DIVISION 2D ARMY CORPS,
"CAMP GEO. G. MEADE, PA., *September 29, 1898.*

"The Surgeon General,
"Washington, D. C.

"SIR: Major Ira C. Brown, Surgeon, U. S. Volunteers, served under my immediate observation, as executive officer of the General Hospital, at Camp Wikoff; and I desire to recommend him for a commission in the regular establishment.

"His zeal and ability in his profession, and energy, as displayed in the execution of his duties, commanded and received my highest commendation.

"I should like very much to have him assigned to duty with my Division, as Surgeons of executive and professional ability are badly needed here.

"Very respectfully,

(Sgd.) "S. B. M. YOUNG,
"Major General, U. S. Vols."
[Now Lieut. General, Retired.]

"U. S. GENERAL HOSPITAL,
"CAMP WIKOFF, L. I., *October 1, 1898.*

"Adjutant General, U. S. Army,
"Washington, D. C.

"SIR: No one deserves more credit than Major Ira C. Brown, Brigade Surgeon, U. S. Volunteers, for the installation and management of this hospital. He has been executive officer from the beginning; and has manifested during its history, such intelli-

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gence, tact and energy that are rarely possessed by one called to occupy a similar position. His capabilities are manifold, and it gives me pleasure to recommend him for any military position in the nomination of the President. He would honor it, I am sure, as much as he does the profession of medicine.

"Very respectfully, your obedient servant,

(Sgd.) "C. L. HEIZMANN,
"*Major and Surgeon, U. S. Army,*
"*In charge.*"
[Now Colonel, Retired.]

"PROVOST MARSHAL'S OFFICE.
"CAMP WIKOFF, L. I., *Sept. 24, 1898.*

"The Surgeon General, U. S. Army,
"Washington, D. C.

"SIR: I have the honor to state that I have known Major Ira C. Brown, Medical Department, U. S. Vols., since June last. He served under my immediate command at Tampa, Florida. I met him again at Fernandina, and have often come in contact with him in the general management of affairs at Camp Wikoff. I have always found him careful, painstaking, energetic and competent in his profession; and he has developed here a wonderful executive ability. I unhesitatingly recommend him for a position as Surgeon in a regular establishment in the Army. His services were especially appreciated by me, when between three and four hundred men answered sick call during the month of July in the camp of the 3d and 6th Cavalry, at Tampa, Florida.

(Sgd.) "GEO. F. CHASE,
"*Captain, 3d Cavalry, U. S. Army,*
"*Provost Marshal General, L. I.*"
[Now Colonel, Inspector General's Dept.]

"HEADQUARTERS DIVISION OF THE PHILIPPINES,
"OFFICE OF THE CHIEF SURGEON,
"MANILA, P. I., *June 15th, 1900.*

"Major Ira C. Brown, Surg., U. S. V.

"SIR: It is with many regrets that I signed the recommendation for your return to the U. S. because in parting with you I lose one of the most valuable and efficient medical officers in the

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Division. You have served under me in Cuba, at Montauk and here, in the field under fire, in hospital during epidemics; and finally in Manila on the Board of Health. Your service has always been satisfactory and your executive ability been marked. I am sure that your military record is second to none.

"I wish for you every good thing, and if I can ever be of service to you, command me freely.

"Sincerely your friend,

(Sgd.) "CHAS. R. GREENLEAF,
"Colonel, Assistant Surgeon General, U. S. A.,
"Chief Surgeon, Div. of the Phil."
[Now Brigadier General, Retired.]

"MONTAUK, N. Y., *September 28th, 1898.*

"Major Ira C. Brown,
"U. S. Vol's.

"MY DEAR DOCTOR: Before we leave this Camp, I wish to put on record the high appreciation I have of your zeal and good work while you were in charge of the sick of the 6th Cavalry, en-route from Tampa, Florida, to this point; your unceasing care and attention to the ill and the ailing made the long journey one of recuperation rather than of misery.

"In all of my service in the Army, I have never had better medical service in my command.

"Yours most sincerely,

(Sgd.) "GEO. S. ANDERSON,
"Captain, 6th Cavalry."
[Now Brigadier General.]

"SOUTHAMPTON, *September 28, 1898.*

"DEAR DOCTOR BROWN: My work at Camp Wikoff is practically finished. I may return to Montauk again, but only for a few hours to say good-bye to those with whom I have formed valuable acquaintances. It would be unfair to you if I went away without adding my thanks on behalf of the Red Cross to you for what you have done for the sick soldiers. So far as I know you and I were the only two people in camp who were there when the hospital began August 6th. I have watched your work during this

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entire time; and as I think over what you have gone through and accomplished, I wonder what we should have done without you. I never have seen you anything but tender to the sick; untiring in your wearisome work of Executive Officer, watchful of any tendency to hurry away a sick man, and always ready to undertake any work, however unpleasant. As to your executive ability, you know what the hospital was before you became responsible for it; what it was toward the close of its active career is, in my judgment, due to your ability; though you were hampered to a very great, and to the public, an unknown degree.

"Accept my best wishes for your future success. However, great your career may be, you can never do better work in the cause of humanity than that which you have accomplished at Camp Wikoff.

"Always sincerely yours,

(Sgd.) "HOWARD TOWNSEND—*Red Cross.*"

"U. S. SOLDIERS' HOME,
"WASHINGTON, D. C., *September 18, 1898.*

"Major Ira C. Brown, Surgeon, U. S. V.,
"Camp Wikoff, Montauk, N. Y.

"DEAR MAJOR: Our pleasant associations at Camp Wikoff having in the course of events come to an end, I desire to extend to you my most cordial thanks for your able support and assistance through five weeks of hard work at that place. Your excellent reputation for executive ability, and high professional attainments has been established elsewhere; and is too widely known to call for any remarks from me, but I must be allowed to express my great admiration for your untiring energy and extraordinary endurance under a physical and mental strain that might well have broken down the strongest constitution. The duties devolving upon you as executive officer of the General Hospitals, and by special instructions of the Secretary of War, through his confidence in your ability were, in those trying emergencies most difficult and exacting. Your faithfulness, efficiency and activity in their execution can only be expressed as superb; while your patient manner and genial disposition through it all were remarked with admiration by every one of the hundreds who daily sought your office on business. Hoping that by some

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means you will be induced to give your valuable services permanently to the medical corps of the regular army, and wishing you personally every good fortune, I remain,

"Very sincerely your friend,

(Sgd.) "W. H. FORWOOD,
"Colonel, Assistant Surgeon General, U. S. A."
[Now Brigadier General, Retired.]

It is dangerous to be serious unless you have something real to be serious about, even when you are a great genius. A man's mouth may be shut and his mind closed much more effectually by his knowing all about a subject than by his knowing nothing about it. I never told Major Nancrede that complaints were many and frequent of his ward management (the officers' ward) I knew two things in relation to this ward, one was that Major Nancrede was doing his best, and that an officers' ward is and always has been a source of annoyance so I paid only attention enough to satisfy myself criticism was the ordinary growl of those unacquainted with necessary hospital restriction. The officers' ward was next to my office and in consequence of this location Major Nancrede had an audience frequently but the ward was placed there purposely because its inmates were expected to be few. I make no excuse for this, however, and would not make a change if I had it to do over again. Major Nancrede was not overworked, in fact, he had less to do than any one because of the small number of officers sick, so he was given other odd jobs from time to time. One day, it was about 1.30 p. m., he came into my office and says, "Brown, you look dead. Go, lie down and I will run the office." That sounded good to me and away I went. Just an hour and an orderly was scratching on my tent, with Major Nancrede's compliments; and would I come to the office. I went at once and there was Major Nancrede surrounded by about fifty men and women all with a request for something. When he saw me he says, "I wouldn't remain here any longer for all the money in the world." I have wondered since reading his article, why in thunder he didn't spring the "Regulations" on them or "Learn his plain duty." Major Nancrede is not of the temperament to be an executive, nor physically able to conduct such an office. He will recall when I had to knock an undertaker down to make him disgorge the money he had taken from a poor old man. That was just part of a day's work.

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"But when a volunteer surgeon who did know," etc. I will say it now, lest I forget it, that the commanding officer and his executive knew better than anyone else the condition of things, how to relieve them and what efforts were being made to accomplish this. They did not confide to every busy-body their plans for the simple reason they had work to do and no time to gossip. I will say more that the efficient work of the medical department at Montauk has never been approached in the history of the world. I invite any one to show me to the contrary. Much of the confusion outside the hospital was due to the hysterical condition of the country. This was kept at white heat by the ever ready press and the poor deluded women who came to Wikoff (some of them), whose hysteria was reflected on the already hysterical country until it was impossible to get a true story from certain sources. This hysterical condition, I am sorry to say, affected the minds of some of the medical officers on duty at Wikoff, and apparently they have never realized the truth about Montauk. Those were glorious days for the American volunteer, and when he has an opportunity to play the hero, trust him to do the part for all there is in it. So he did at Montauk, and contributed not a little to the general confusion and horrible stories of neglect.

The smaller audience who first heard Major Nancrede lecture are to be pittied. To hold before their innocent eyes the ghastly remains of the volunteer surgeon and to point out his shortcomings is enough to make them thank God that it was not for them to see such sights, but the blow was lessened when Major Nancrede said to them that they would never be called upon to witness the awful things that he had witnessed—to such a prophecy I say amen. I feel the same today as I did twelve years ago, regarding typhoid carriers, and if I had to choose between the individual and wholesale camp infection I would sacrifice the individual if it would prevent wholesale infection by typhoid; the prevention of camp infection has become a sort of religion with me. So to Major Nancrede's charge that I kept men policing rather than holding the crowd back I plead guilty, but without criminal intent.

The Major asks this question: "How many of the sick at Montauk need have been ill had their medical officers done their full duty?" Basing reply upon the knowledge of the profession at that time I should say the number that we have the records of

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today, but he says he knew how to prevent this. Did he have any sick in his division? Surely he did, the same as others if equally exposed; and I don't blame him one bit.

This answer is not personal only in so far as personalities enter into it to show the drift of current events at the time, and if I have seemed to have tried to annoy or insult any one, there is no such intention on my part. I have hoped to show that Major Nancrede has forgotten after all these years. I believe he honestly thinks what he said in his lecture was true, but it is'nt.

I want to again express my gratitude and renew my statement of admiration and loyalty to the men who were my commanding officers at Montauk—all long since retired—and to those who so fully supported them and me during the Montauk days. I want to say it is an honor and pleasure to be able to assert that I, too, was one of the men who contributed his best for the relief of his fellow countrymen on that occasion. Most of you, my Camp Wikoff associates, know that if you come my way in this mundane sphere and find anything you want—that we both want—I'll divide even with you. But when you go to Heaven you will be frightfully conscious of your wings for the first year or so. When you meet your friends there, and they persist in treating you as if you were still a mortal, perhaps you will try to get into a circle which has never known you except as an angel.

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THE PREVENTION OF TYPHOID FEVER.*

By Lieut. Col. F. R. Keefer, Medical Corps, U. S. A.

OF all the diseases to which the human race is liable, typhoid fever is the special scourge of armies.

In our civil war, the Union Army had over 80,000 cases recognized as such and there were probably as many more which, because of difficult diagnosis were thought to be malaria and other affections.

The Germans, in the war with France in 1870, had over 73,000 cases and nearly 9,000 deaths, although active hostilities lasted but six months.

The British Army in South Africa, while fighting with the Boers, had 31,000 cases and nearly 6,000 deaths.

In our war with Spain, we had 20,738 cases with 1,580 deaths and among 108,000 men, all occurring within 3½ months. One man in every six had the disease, while this proportion was increased to one in five among those regiments which never left the United States. Typhoid fever caused nine-tenths of all deaths occurring among troops encamped in the United States in 1898.

The 49th Iowa, out of 1,236 men, had 612 cases; that is, about half the personnel of the regiment was attacked and 50 men died. This mortality is all the more remarkable from the fact that not another death occurred in the regiment from any other cause.

The 15th Minnesota had 475 men stricken with the disease, most of them while camped within the borders of their own state.

Such instances might be multiplied indefinitely, but enough has been said to show you what an immense amount of sickness and military inefficiency—to say nothing of the suffering and death of individuals, with economic loss—this dreaded disease causes. As further evidence of its importance from a military standpoint, I exhibit to you the two immense volumes prepared by three of our medical officers in 1898, entitled "Report on the origin and spread of typhoid fever in military camps in the United States in 1898."

*Lecture delivered to the Corps of Cadets, U. S. Military Academy.

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Typhoid fever exists constantly in civil communities and it is safe to say that a thousand men of military age could not be assembled anywhere in this country without at least one man bringing the disease along with him.

It is estimated that in the United States we have annually about 400,000 cases of typhoid fever, with approximately 40,000 deaths. This means a death for every ten persons attacked and many who do not die never recover completely but become chronic invalids or are crippled in various ways.

Young men are peculiarly liable to the disease, which by preference attacks males between the ages of 15 and 40. However, cases are by no means infrequent in later life.

Typhoid fever is due to a tiny little vegetable germ—or rather, to aggregations of billions and trillions of such germs—to which is given the name, typhoid bacillus. When looked at under the microscope, these germs, if suspended in a drop of water, are seen to have very active motion. They multiply with enormous rapidity, so that, under favorable conditions, a single germ may develop into many millions within 24 hours.

Typhoid bacilli find the most favorable soil for their growth and increase in the bowels of human beings; they are usually found also in the urine of infected individuals. The disease is spread therefore by the discharges of such individuals gaining access to the intestinal canals of others, by swallowing substances contaminated with the germ. This may happen directly, by contact with a diseased person or indirectly, through infected water, milk, uncooked fruit and vegetables, dust flies, soiled hands, garments, bedding or tentage.

If we had a perfect method of disposal of these waste products of the body, it would not be long before typhoid fever would be but a memory. You can readily see, however, that it is more likely to become epidemic in military than in civil life, because of the greater difficulty in disposing of these wastes, and the close crowding and intimate contact of young men, under the conditions of camp and barrack life. A man affected with typhoid may scatter the germs of the disease all over camp (by urinating and defecating in various places) before the disease is recognized in himself, since it frequently happens that mild cases are not detected for a week or two from their onset. Moreover, about one person in every twenty-five continues to breed the germs in his bowels and bladder and to scatter them abroad, after he has

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seemingly recovered. Such a man, placed on duty as cook, for instance, may infect every susceptible member of his company.

We now have a method of protection against this disease, which is nearly as efficacious as is vaccination against smallpox. It is well known that an attack of typhoid fever usually protects a man against a subsequent attack. Only one case in 143 has typhoid a second time and the method of protection referred to is found to confer immunity in a similar way, and, it is thought, to an equal degree.

The development of the method is interesting and I will give you a brief description of it: Acting upon the knowledge, heretofore mentioned, that an attack of typhoid protects against the disease subsequently, by causing the formation in the blood of substances which are antidotal to the typhoid bacillus, an English army surgeon began a few years ago, to experiment in the artificial production of these substances. He found that when he killed typhoid bacilli by subjecting them to heat and then injected a quantity of them under the skin of an animal (in this case, the guinea pig) which is susceptible to the disease, he produced in the blood of this animal, exactly such substances—called antibodies, for convenience—as an attack of typhoid produces in the blood of man. Here, then, was his clue, which he followed up by injecting killed bacilli under the skin of some English soldiers going to the Boer War. The results were but fairly good and it was only after some years of further experimentation that it was found that not enough antibodies were produced by a single dose and that a second and even a third injection at intervals of about ten days, were necessary to produce satisfactory immunity.

Since this stage of knowledge has been reached, the British and German armies have tested the procedure (which is now known as anti-typhoid vaccination) with strikingly good results.

The Germans, in their campaign against the Herreros in Southwest Africa, 1904 to 1907, cut their typhoid rate in half by vaccinating a part of their soldiers. Those who, in spite of the treatment, were attacked by the disease, had mild cases, which were seldom attended by complications.

In 1908 the British vaccinated about 6,000 of their soldiers in India and maintained nearly an equal number of unvaccinated men under similar conditions, in order to compare the results. It was found that seven times as many of the non-vaccinated contracted typhoid and that eleven times as many died of it. More-

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over, all but four of the vaccinated men who contracted the disease, received but one dose, while these four had very mild attacks. To make the comparison of results even more striking, it may be said that as many of the non-vaccinated died of this fever as were taken sick among the vaccinated individuals.

In view of these remarkable figures, one of our own army medical officers, Major Russell, who has made a specialty of this kind of work, was sent to England and Germany to study the method and report upon it. His report so thoroughly endorsed it, that the Surgeon General, 18 month ago, convened a Board composed of a number of the foremost medical scientists in this country (who had previously accepted commissions on the "Distinguished List" of our Army Medical Reserve Corps) to study the matter and to make recommendations as to the employment of the procedure in our army. These are their conclusions, made unanimously:

"First: The Board is convinced that the practice of antityphoid vaccination is both useful and harmless and that it offers a practical means of diminishing the amount of typhoid fever in the army, both in times of peace and war.

"Second: It finds that the experience to date with antityphoid vaccination justifies it in recommending the introduction of the practice in the Regular and Volunteer armies in time of war.

"Third: It recommends the immediate introduction of the practice of voluntary vaccination in the Hospital Corps, the Army Nurse Corps and in any expedition of troops from the regular army which is ordered to take the field for active operations; and further, that an opportunity be given to volunteers from the army as a whole to be protected by vaccination against typhoid."

At the time this board of scientists met, 35,000 men in the German and British armies had been vaccinated, with no bad results to any of them but with remarkable results in the prevention of typhoid fever. Our Surgeon General therefore issued a call for volunteers to undergo the treatment, to which a large number has responded.

Up to October first of this year, 13,000 of our officers and men have taken the treatment with no bad result in a single case. This number amounts to about one-sixth of the personnel of the army. Among these, but five cases of typhoid fever have developed of which four were so mild as to leave a doubt about the correctness of the diagnosis; these cases have been mild and all

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have ended in recovery. In the rest of the army, there have been 418 cases. Assuming that the conditions were otherwise identical, there should have been at this rate 70 cases among the vaccinated men, or 14 times as many as actually occurred.

A striking exemplification of the value of this procedure has been observed very recently. A company of Engineers stationed at Washington Barracks, numbering 130 men, had all but 26 of its men vaccinated against typhoid. Early in August, on their return march from the maneuver camp at Gettysburg, seven of the men contracted the disease and every one of them were of those who had declined the treatment. As all members of the company were, doubtless, equally exposed, the inference is obvious.

The material employed is prepared in the Army Medical Laboratory at Washington and after sterilization by heat at a temperature of 56° Centigrade (133° Fahrenheit), a small percentage of disinfectant is added to insure its keeping properties and it is placed in sealed glass tubes. When a vaccination is to be made, the tip of the glass tube is broken off, the contents sucked up into a hypodermic syringe and a small amount is injected under the skin of the arm in the situation used for ordinary vaccination.

Usually, within three or four hours from the time of the injection, the vaccinated man notices certain symptoms of the action of the substance. These are redness, swelling and soreness for an inch or two about the site of the injection, with perhaps some headache, backache, feverishness and a sick feeling. These symptoms vary in severity with different individuals, but in 36,000 doses administered to persons in our army, less than 1% have been followed by anything like severe reactions, while less than 5% show even moderate severity. In two-thirds of all cases, practically no reaction has been observed, other than a little soreness of the arm. Symptoms of the usual reaction may best be described by saying that one feels as if he were coming down with a cold, but as recovery follows so quickly, he realizes that it was merely the effects of the vaccine.

This reaction lasts from 4 to 48 hours. In most cases, if the dose is administered in the afternoon for instance, the symptoms are quite gone by the following morning. The discomforts attendant upon immunization against this dread disease are therefore much slighter and briefer than are those of a successful

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vaccination against smallpox and infinitely less painful than a visit to the dentist.

We do not yet know how long the immunity conferred in this manner will persist. However, we find that the vaccination produces in the blood a greater quantity of the so-called antibodies than are produced by an attack of the fever. We know that, as before mentioned, an attack of the disease protects, as a rule, throughout life.

The experience of the English, who have been using the method longer than we, would seem to show that men were still protected after the lapse of three years. If the immunization lasts no longer than three years, however, this period would still be sufficient for us as military men, since no war in the present age is likely to last so long. Then, too, just as experience has shown the value of occasional reimmunizations against smallpox, it may be found desirable to repeat the antityphoid vaccination prior to special military operations involving increased risk from the disease.

In peace times, the dangers of contracting typhoid fever, while less than those in war, are still great, as indicated by the figures quoted in the earlier part of this paper. What man among you does not recall cases in his own immediate family or among his intimates. Even now, two of your number (Cadets Prude and Vaughn) are just convalescing from attacks of this affection.

An epidemic of this disease, which, according to newspaper reports, has so far attacked 27 individuals, is now prevalent among the midshipmen at the Naval Academy. The authorities there, recognizing the value of the procedure discussed in this paper, have obtained a supply of vaccine from our Army Medical Laboratory and are immunizing the Corps of Midshipmen therewith.

The Surgeon General, in his annual report just published says "It is believed that * * * the innocuousness of this procedure has been entirely demonstrated. Its protective value is now believed to be as perfectly established as any fact in medicine and if it is desired by the War Department that the troops have the benefit of this protection, the time has come to require it as a routine procedure throughout the army."

Vaccination against smallpox is practiced in the army as a compulsory measure and cases of this disease are in consequence, very rare. Pending the time when compulsory immunization

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against typhoid is adopted, since the discomforts of the latter are so much slighter and briefer than are those of a successful anti-smallpox vaccination, while the results are of so great value to the service as well as to the individual, I urge you to volunteer to take the treatment.

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THE ETHICS, SCOPE AND PREROGATIVE OF THE ARMY MEDICAL OFFICER.*

By Colonel L. Mervin Maus, Medical Corps, U. S. Army.

SINCE the renaissance of the Medical Department, which dates from the tragic loss of the Maine in the harbor of Havana, and the fever stricken camps of the South during the early months of the War with Spain, great attention has been directed to the care of troops in the field, medico-military organization, army hygiene and sanitation, and the prophylaxis of camp diseases. The study of these important subjects has already borne great fruit, as shown by the marked reduction of morbidity among our troops, both at home and in our colonies, during the past several years. In the preparation of my paper for the Association I have selected a correlative subject, "The Ethics, Scope and Prerogative of the Army Medical Officer," which involves questions of vital importance to the execution and enforcement of those great principles laid down by the Medical Department for the preservation of the health of the men, and the successful administration of the army in peace and war.

I have used the term renaissance of the Medical Department advisedly, for there can be no doubt but that our organization has been undergoing a great evolution since the unfortunate experiences of Chickamauga and Montauk Point, and is on the éve of a regeneration, which is bound to increase its usefulness a thousand fold. The older medical officers who are with us today will recall painfully those dreary years of mental apathy and official restriction, which paralyzed energy, destroyed ambition, and suppressed corps pride. For more than thirty-six years I have watched the progress of our Department, and oft-times during the early years of my career have felt that we were floating upon a sea of uncertain military officialism without rudder or sail.

Time and again Opportunity has knocked at our door, but unfortunately there was no one to put us in the pool when the waters were troubled. During that period of decadence, which followed

*Read at the 19th Annual Meeting.

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in the wake of the great War of the Union, and continued well into the nineties, the medical corps suffered from inertia, was affected with a species of dry rot, which had eaten its way into the very heart of the organization, and from which it awakened in 1898 only to find the entire country convulsed over the dreadful disasters of our Southern camps.

When that grand old patriot-soldier, General Sherman, gave birth to the immortal truism, "War is Hell," he no doubt bore fresh in his memory his own unfortunate experiences with the mold and canker of campaign life, which decimate armies, destroy their heart and spirit and convert camp and bivouac into a living cemetery and field of desolation. He remembered keenly the pathetic and agonizing scenes of crowded hospital wards, the emaciated faces of thousands of his gallant men, and the endless stream of funeral processions from the army morgue.

In the days of old when knighthood was in flower, gallant warriors went singing to their graves, for war was glorious and to die in defense of country and flag an honor and a privilege. Grecian matrons wept in those days because they no longer had sons to offer up for their country's safety, and it was only yesterday that their patriotic sisters of the Far East bade departing husbands, brothers and lovers die rather than return empty handed of honor and victory.

Although half a century has passed away since the war between the North and South, with its unnecessary sacrifice of life through ignorance and poor camp sanitation, it is to our shame that the recent experiences during the War with Spain have shown that the dreadful lessons of 1861-65 remained unheeded. Therefore, in order to prevent a repetition of our unfortunate experiences in future wars, many important fields of special work now administered conjointly or independently by other branches of the service, will have to be transferred to the Medical Corps before it can *in extenso* exercise all of those functions for which it is specially fitted and which would promote its greater usefulness in the military hierarchy.

In considering the advances made in medico-military organization and tactical field work of other armies, especially those of Germany and Japan, the question arises as to the cause or causes of our own inertia in these important directions. It may seem singular but nevertheless it is true, that none of the many problems which have been worked out at our various camps of in-

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struction during the past several years, has contemplated the cooperation of the medical department as an adjunct to the battle field. The possibility of injury, wound or death during the engagement apparently never occurred to the officers who originated the maneuver.

Is it not conceded that the establishment of first aid and ambulance stations, and field hospitals behind the firing line during actual battle is most important, and that these duties can be learned thoroughly only during the regular maneuver prescribed for the army?

While the line of the army as a whole has not always been in sympathy with the advancement in scope of our department, it alone is not responsible for our lack of development. After a careful retrospect of the situation I am not so sure but that the blame of the present condition may not be laid at our own door. Many glorious opportunities have escaped us through indifference and lack of appreciation, the most monumental of which was the refusal, more than a generation ago, of the fusion of the Marine-Hospital Service with the Army Medical Department.

The great advantages of such a union, even today, should be apparent not only to the officers of both branches of the service but to the government as well. The similarity of many of the functions of each class of officers, especially the duties of public health, general and special sanitation, quarantine, hospital organization and management, the care of the sick, property responsibility, examinations, etc., bring the functions of each corps quite closely together as it is, and there would be no difficulty, I am sure, of complete affiliation. The blending of the two corps would aggrandize the work of each, increase their usefulness and add interest to the varied services. The government would be the gainer in time of war by the combination, for the enlarged medical corps would then be enabled to furnish a much larger pro rata of experienced medical officers to occupy the more important positions of medical administration.

In spite of our status at present I feel that I can safely say that there is no class of officers in the army of more importance, or that holds a position of greater trust or responsibility. To become a valuable and useful member of the corps certain inherent qualifications are necessary, besides those acquired in the college and university. Among these attributes are natural fitness and adaptability, qualities which mark the successful man in any

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calling or walk in life. Besides these, he should posses tact and diplomacy, application and zeal, honesty and loyalty, but above all things that divine gift, the most valuable of all assets to mankind in general, which is known as common sense.

There is no place in the medical staff for the man who is erratic and capricious in his actions, who is lop-sided, circumscribed in mental horizon, who can see a question only from one side and that from his own angle-of-view. Neither is there place for the idler, the laggard, the man of dissipated habits or the time server. You, my friends, have suffered from these misfits, I have suffered from them, and the reputation of the corps has suffered from them.

The duties of the medical corps do not fit every candidate who successfully passes the Army Medical School any more than the position of the line officer of the Army and Navy fits every one who graduates from West Point or the Naval Academy. We are aware that hundreds of such graduates have made dismal failures of their lives after entering the service, because by nature they were not fitted for the professions they unfortunately adopted. The talents essential to the successful architect or mechanical engineer are entirely thrown away on the man who adopts literature or teaching as a profession. The gifts of music, painting and the stage, so essential to the successful disciples of these delightful arts, might prove a decided disadvantage to the serious student of medicine, chemistry or physics.

Therefore, if special fitness and adaptability are so essential to the man of one calling, how much more so are they to the man like the medical officer, who has so many rôles to play in the game of army life. In order to qualify and make good in this important position, he must be a man of collegiate education or its equivalent, an accomplished physician and surgeon, an expert in the eye, nose and throat, a master of obstetrics, gynecology and pediatrics, an alienist, a past master in military hygiene and camp sanitation, and a thorough student of military regulations, customs, and army life.

Besides these he must understand military law, a certain degree of tactics, especially those relating to hospital corps and ambulance drills, the art of the architect and builder, the duties of judge advocate, quartermaster, commissary, paymaster, the knowledge of command of hospitals, hospital ships and trains, ambulance companies, and the multitudinous and varied duties

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connected with medical administration in all of its complex branches.

Among the many important qualifications necessary for the success of the medical officer, which must not be forgotten, is that of general information and knowledge, which at the outset of one's career contribute greatly to one's respect, and not infrequently becomes the lever which turns the popular opinion in his favor at his post of duty.

The individual, who by nature has been endowed with an attractive personality, starts out in life with a decided advantage over his less favored competitor, as well as the man who possesses an illustrious lineage supported by wealth. Fortunately, however, for the aspirant from the obscure walks of life, neither distinguished ancestry nor wealth will in the end outclass genuine merit. The general knowledge of the American public relative to the lives of many of our greatest statesmen, physicians, scientists and soldiers, who have risen from the rank and file, makes it unnecessary for me to dwell longer on this subject.

"Lives of great men all remind us,
We can make our lives sublime,
And departing leave behind us,
Footprints on the sands of time."

In the preparation of the medical officer, I regard early military training of paramount importance. The student who graduates from a military academy or college, in my opinion, possesses a decided advantage over the man who enters the Army without military training. So essentially important do I regard this early training for the medico-military aspirant, that I would unhesitatingly recommend, if it were possible, that every candidate for the medical corps be required to graduate at West Point or some well-known military school before matriculating in the medical course. It may not be necessary that he pursue the entire curriculum arranged for the prospective lieutenant of the line, but only so much, as may be necessary to instill the principles of thorough discipline, military drill and the essentials of command. This plan is entirely feasible and it is possible that the government may yet arrange an elective course at the National Military Academy for cadets, who desire to enter the different branches of the line or staff, including the medical corps, or who may be assigned to these different branches on account of peculiar fitness.

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Should an elective course be arranged at West Point to become effective after two years of study, I believe that many of the cadets would select the medical corps, after discovering their special aptitude for that branch of the service. Our sister republic, Mexico, in the National Military School at Chapultepec, has arranged curricula for those especially adapted for infantry, cavalry, artillery and the various scientific staff corps, which vary in character and length of time. The medical officers as a rule graduate from the University of Mexico, a federal institution, at the expense of the government, after pursuing a preliminary course as military aspirants. Should our government finally decide to assume charge of the education of the officers for the public medical services, it should establish a National Medical School in Washington for the preparation of the candidates for the three branches of the service, namely, the Army, Navy and Public Health and Marine-Hospital Service.

The principles of ethics, which govern the profession in civil life, apply equally to the army medical officer. He should stand ready at all times to respond cheerfully to the call of the sick and injured, never forgetting his obligation as a physician, nor that delay may entail unnecessary suffering or prove fatal. His position in the military hierarchy relieves him in no wise from rendering the same character of service to the men under his charge that he would if practicing in civil life, nor should he discriminate in his attentions between the lowest private and the highest ranking commissioned officer.

Then again, there is the unwritten code which compels him to attend with cheerfulness and punctuality the families of officers, their wives, children, servants and the "strangers within their gates," remembering that this time-honored courtesy has always been rendered his colleagues of the line, because they are more or less dependent on the post medical officer for such services. It is quite true that at times the faithful medical attendant may have reason to feel that his services have not been appreciated and that his devotion has been in vain. The philosophic officer must be prepared to meet these unpleasant experiences and learn to "forget them." They do not occur with greater frequency in the army than in civil life, nor is any class of medical men free from them, from the renowned metropolitan specialist to the obscure country physician.

"Thy fate is the common fate of all."

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Like his well equipped colleague in civil life, he should be candid in diagnosis, avoiding gloomy prognostications, and should be cheerful and rather optimistic, inspiring hope in serious cases, which becomes a powerful factor in the treatment of patients burdened with a neurotic element.

The man privileged to wear the cloth of our public services should ever uphold the honor and dignity of his position, should be a cavalier *sans peur et sans reproche,* bearing always in mind that there is no profession where a higher standard of moral excellence is required or expected. In his dealings with the profession at large the army medical officer should exercise the greatest fair-mindedness and generosity, especially should he be called in as a consultant with a colleague in civil life. He should remember that marked differences of opinion publicly expressed may greatly injure a man who depends upon his clientele for daily bread. As an official of the government he may become with perfect propriety a guardian of the public health, and render to the locality where he is stationed such services as may be necessary to improve sanitary conditions, especially during epidemics of contagious diseases. He is also in a position to render signal service to a community by advising them against the employment of quacks, charlatans and imposters who prey upon the public, and fleece the poor and needy.

The scope of the medical officers' duties, which from the great war of the Union until 1898, was more or less confined to the care of the sick and hospital work, has materially broadened, although many valuable fields of work are still denied him, which would vastly improve the administration and well being of the army. Among the important duties delegated to the medical department is that of sanitation, through paragraph 1406, Army Regulations, whereby the medical officer becomes the army sanitarian in name, if not altogether in function. This regulation authorizes him to supervise the sanitation of the command to which attached, and to recommend to the commanding officer such measures as he deems best for the health of all concerned, and which must be carried out if practicable or regarded advisable. This weapon of authority is quite formidable, and is rarely appreciated by the medical officer. Should the commanding officer deem the medical officer's recommendations impracticable or unnecessary, by regulations he becomes responsible for results, and is compelled to for-

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ward the paper to Washington through intermediate channels with an endorsement of objections.

No commanding officer of intelligence or self respect desires to file an ill advised objection against a sound sanitary recommendation, nor should a wise medical officer submit any unless necessary. Unfortunately, as the chief medical executive of a command in the field or department, I have been compelled at times to review, not only a number of illogical objections on the part of commanding officers, but a number of ill-advised recommendations on the part of medical officers.

For a generation or more great stress has been laid on the monthly sanitary report, which appears to me of less importance than the special sanitary report which is also contemplated, for the good reason that if the evil exist, why wait until the end of the month for its correction? The monthly stereotyped statements as to the conditions of grounds, quarters, water, clothes, rations and the habits of the men from the well established posts of the army appear entirely unnecessary and merely add additional clerical work.

Commanding officers usually exhibit great interest in the management of their posts and commands, and indeed act at times as if they owned the entire garrison "horse and foot." These are the conceits of frail humanity "vested with brief authority," and pervade all mankind, are found alike in every walk and condition of life and must be respected and reckoned with. Any criticism therefore leveled at the post by the medical officer, is liable to be resented unless made with tact. Candor and frankness are admirable qualities in any one, but there is such a thing as painful bluntness, which is positively inexcusable. It is not difficult to understand why the commanding officer should resent a criticism which he regards as unjust or too severe. This condition not infrequently happens in post life on the receipt of the monthly sanitary report and results in anything but an "entente cordiale" between the two officers concerned. Line officers have not been educated along the broad lines of sanitation, and frequently fail to appreciate the situation from the standpoint of the medical officer.

Skill, tact and diplomacy are required in securing the enactment in public life of sanitary measures, which require legislative action or official cooperation. The same principle applies in army life to those in authority, so why not exercise wise judgment and

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sound common sense in securing what is necessary? No wise medical officer should make the mistake of submitting a harsh official letter to the adjutant in regard to a condition which could be corrected by personal conference. Occasionally it becomes necessary to submit recommendations, the correction of which requires action from higher authority and the expenditure of considerable money. As a rule, if the medical officer's recommendations are necessary and proper, he will find the commanding officer willing to cooperate cheerfully, for the latter is equally interested in the welfare of the post. The medical officer should always remember that he is a member of the commanding officer's staff, and is there for the purpose of assisting in the administration of the post, and should always perform his duty in the spirit, if not according to the letter of the law.

For several years the practical, as well as the theoretical part of camp sanitation has been turned over to the medical department at some of the camps of instruction with excellent results. Chief sanitary inspectors have been given entire control of the removal of the excreta and garbage, with increased authority for the enforcement of sanitary orders. This transfer of work, usually performed by the quartermaster, is in the direction of greater efficiency and better administration, and should become general throughout the army. I have had an opportunity to observe the results of this innovation at two camps of instruction where I performed the duties of chief surgeon. On one occasion at Camp Mabry, Austin, Texas, 1906, the other one at the Camp of Instruction, Fort Benjamin Harrison, Indiana, during the past September. The following remarks taken from the report of Brigadier General C. L. Hodges, who commanded the encampment, show his views on the subject:

"The sanitation of the camp, including the actual disposal of the garbage and slops, manure and other refuse matter, was entirely in the hands of the Medical Department. This was an immense relief to the Quartermaster's Department and served to remove a constant source of friction usually resulting when two departments are responsible for the same thing. The entire sanitary outfit, garbage carts, odorless excavator wagons, crematory at the post, and personnel connected thereto, although paid for by the Quartermaster's Department, were turned over to the Medical Department and placed under the direct orders of the Chief Sanitary Officer. Under his directions the work went forward

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in a most satisfactory manner and I am heartily in accord with the arrangement. The percentage of sick as given above is almost negligible and is the best evidence possible to show how thoroughly the details of camp sanitation were thought out and put into execution."

The growing importance of the sanitary campaign waged by the medical officer, has become thoroughly recognized, and will have much to do with the success of future wars. So important do I regard this duty in time of war, that if called upon to devise a battle flag, I would unhesitatingly emblazon in golden design, the figure of the goddess Hygeia, in the very center of that glorious cluster of glittering stars.

In the enumeration of the varied and complex duties which the medical officer is called upon to perform, I will make no further reference to the strictly professional side of his work, which will continue to be the most important in times of peace and in well regulated posts. Specializing, which has become so general among practitioners in civil life, has made little progress in the army. There is a great need in army circles of specialists on the eye, ear, nose, throat, alienists, experts on nervous diseases, on diseases of the stomach and intestines, skilled surgical operators, biologists and sanitary engineers. It is true that among the members of the corps are several oculists and eminent bacteriologists and more skilled surgeons. Each department of the army in time of peace, and each division during war, should be well supplied with these experts.

Owing to a lack of such specialists, officers and men are sent to the Walter Reed Hospital in Washington or the General Hospital at the Presidio of San Francisco at great cost to the government, quite frequently at a greater cost than would be incurred by the employment of a local specialist near the home station. I do not know the cost of mileage for sending officers to our general hospitals for special treatment, in addition to that expended on local specialists for the same purpose but, from general knowledge, I would say that it would more than defray the expenses of twenty medical officers detailed annually by the government to institutions for special study of expert professional work. Much money is being expended constantly by the government on the education of officers of the line and other staff corps in special work connected with their departments, and I can see no good reasons why a certain number of medical officers should not be singled out for

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special work, and prepared at the expense of the government. Were medical officers assigned to the recruiting stations in large cities, they would have excellent opportunities for taking up these important specialties.

There is also a field for the sanitary engineer in the army, for work now performed in part by the quartermaster department, medical department and experts employed from civil life. The services of medical officers skilled in sanitary engineering should be employed in all sanitary engineering work connected with the army, such as the installation of sewer systems, septic tanks, disinfecting plants, post water supply, and such other work as enters the province of the sanitary engineer. Officers of the corps adapted for this duty should be especially trained at the expense of the government.

The higher ethics of army life require every one who enters the service, as an army officer, to dedicate himself both in body and soul, to the interests of his calling. He is expected not only to perform the ordinary duties of his office with zeal and industry, but to devote his mind to the study of those subjects, which will advance the interests of the government and promote the efficiency of the service. It is with this spirit that I have devoted much thought and study for many years to the recruitment of the army, and as a result have recommended its transfer to the Medical Department, which is so eminently fitted for these duties by reason of professional attainment and military training.

The essential feature of recruiting consists of the physical examination of the men, a duty which no class of officers, except the medical, is qualified to perform. It is true that for several years the system has in many respects been changed, and a larger share of the work turned over to medical officers. Owing to the entrenched customs of the service, for many years, medical officers were not regarded as eligible to administer the oath, and their participation in the system was confined solely to the physical examination.

According to the present method a partial examination of the recruit, or rather candidate, takes place at the recruiting station, under a line officer, who has charge of the station, and is completed by the medical officer at one of the recruiting depots, to which the applicant is finally transported. The transfer of the applicant to the recruiting depots entails a very considerable expense to the government, in the way of railroad fare, board, medical attendance and other expenses.

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From 20 to 25 per cent of the men sent to Jefferson Barracks from Chicago are rejected, and I presume the pro rata from other cities is about the same. Those men who fail to pass the medical board, are entitled to board, and a return railroad ticket to the point of acceptance, and I have no doubt a pension besides, if they can make a reasonable showing to the Pension Bureau that they were in any way injured en route. Besides the rejected candidates who fail to enlist after arrival, a large percentage of the men change their minds after the long railroad journey and decide to cut out the army.

During my service as an army officer, which extends as far back as 1874, many systems have been tried, which in turn have been discarded. The present one, under the able supervision of Major General F. C. Ainsworth, the Adjutant General of the army, seems to be as efficient as is possible under existing circumstances. Should the recruitment be finally turned over to the Medical Department, it would become necessary to increase the corps to meet the new demands. Such a transfer, however, would release a corresponding number of line officers, who could return to their regiments. Besides, the detailed medical officers would be enabled to pursue special medical studies in the large cities where stationed, thereby doubly increasing their value to the government.

Medical officers are frequently called upon to perform a very important duty in connection with retiring boards. The composition of such boards at present consists of two officers of the medical corps and three from the line, or line and other staff corps. These boards in my opinion should consist exclusively of medical officers, who by education and training are the only officers in the service competent to pass an opinion as to the physical condition of the officers brought before the board. Officers of the medical corps are the sole arbiters in the case of enlisted men, who are examined for physical disabilities, and why not for the commissioned officer as well. It is my opinion that this class of work would be more satisfactory in every respect if performed exclusively by medical boards.

During and following the War of our Independence, and indeed until within a few years of the Civil War, medical officers of the army were designated by the grades of surgeons and surgeons' mates, the latter being superseded by assistant surgeon. The higher grades were physician, apothecary or surgeon general,

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medical director, medical purveyor, etc. They enjoyed only a relative rank and were regarded as quasi-commissioned officers, who were called into the service to lop off shattered arms and legs. Although the scope of the medical officer has broadened immensely since then, the term surgeon is still employed as the official military designation, which in a very limited way, defines his duties at the present day.

I have long since regarded this term as inappropriate, preferring decidedly that of medical officer, which is in general use in the French and English armies. Nor do I approve of the designation of chief surgeon, which is employed to designate the principal medical officer of a department, army, division or separate brigade in the field. The term is more or less misleading, for in no manner does it define his position of direction and control. It is also misleading to the public at large, and implies the duties of the chief operating surgeon, attached to the command, who in all probability would be an officer with much lower rank.

I would therefore suggest that the following designations be made official: For an army in the field or a military tactical division, surgeon general; for a division, division surgeon general; for a brigade, brigade surgeon general; for a general hospital, field hospital, hospital ship, hospital train, post hospital, or ambulance company, commanding officer; for a medical supply depot, officer in charge; for a regiment or separate battalion, chief medical officer; for other officers assigned as juniors, medical officer. In order to preserve harmony in military designation, those officers assigned to medico-military inspection or sanitary work should be designated medical inspector general or sanitary inspector general as the case might be. Such military terms would harmonize with the designations of adjutant general and inspector general, which are used in the line of the army.

There are few officers in the army at present who doubt the wisdom of conferring actual military rank on the medical officer, in view of the many duties he is called upon to perform, where the exercise of authority and command are necessary. His sphere of usefulness has increased in many respects throughout the various armies of the world during the past generation, and there are few civilized countries, where he does not enjoy both rank and its corresponding title. Besides, rank is essential to pay, quarters, fuel, lighting, precedence on military courts, boards, and military and semi-military social functions in both army and navy.

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What man of spirit, pride or culture would be willing to accept a position in the military hierarchy today which entailed official discrimination or disparagement. Unfortunate as it may be, though nevertheless true, military rank is actually necessary in the military service, in order to maintain social consideration in the uniformed world.

Owing to the professional link between the physician in civil life and the medical officer of the army, the great body politic is still inclined to regard the application of the term soldier to the army surgeon as an anomaly, retaining in mind the impression which for untold centuries has been extant, that this honorable distinction has been applied solely to the man behind the gun, the individual, whose mission in life is to kill and destroy. The world has yet to learn the broad and humane definition of the term soldier, and that the uniformed officials, who build bridges and roads, provide arms and accoutrements, clothes and transportation. bread and meat, medical care and attendance, and the monthly pay, are equally members of the militant force, equally necessary in the great game of war. Even looking at the official status of the medical officer from the same standpoint as the public, I can see no more reason why he should be regarded less eligible for military rank and title, than the engineer and ordnance officer, quartermaster, commissary and paymaster, whose field of work, though of the utmost importance, is less remotely connected with actual command and line of battle than the medical officer.

Do not the statistics of the great War of the Union show that more medical officers were killed in action than of all of the remaining staff corps together? And is it not true that the medical officer is the only one of the various corps, whose presence is required on the firing line? It is not necessary for the medical officer to hide behind borrowed plumes to prove that he is a soldier, and that in the highest acceptance of the term. He is a fighting man of the first class, a warrior, who is always on the firing line in pursuit of that great invisible foe, who keeps step with the men on the march, lounges with them around the camp fires, lurks in the mess kit and water barrel, and kills twenty men for every one killed by the enemy's fire.

Whether he likes it or not, the medical officer is a soldier, for there is no place in the military hierarchy for the man who is devoid of national spirit or the pride of position. The medical degree does not limit capacity, as our brethren of the line seem to

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believe, nor do scholastic honors narrow the faculties. The title of doctor is not essential to mark the medical man, for have not scores of England's most distinguished surgeons been plain mister? To become of real value as a factor in war, the medical officer must willingly learn and accept the military part of his duties, which entails administration, control and command, with the corresponding rank and title necessary to enforce them.

But, after all, "What's in a title, a rose by any other name would smell as sweet." The title of doctor seems quite appropriate when applied to the medical officer who officiates at the bedside in the capacity of physician, and any member of the corps who resents this time-honored, academic title acts unwisely.

Neither high-sounding degree nor lordly title could add further lustre to the names of those great English commoners, Brown, Bright and Gladstone, to those immortal benefactors of suffering humanity, Jenner, Koch and Pasteur, or to our own Reed, Carroll and Lazear.

"Honor and Fame from no condition rise,
Act well your part, there all the honor lies."

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REPORT ON AN AFRICAN TRIP.*

By Major Wm. W. Roberts, Medical Corps, U. S. Army.

THE purpose of this trip was to obtain a general view of the methods of the European powers in dealing with African sanitation problems, and especially trypanosomiasis. It was my intention originally to go down the west coast of Africa as far as the Congo, up that river as far as possible by steamer, then south through Angola and German West Africa to Cape Colony, returing to Europe via Portugese East Africa, Uganda, and Egypt. This proved impossible, however, communication betweeen Matachi, on the Congo, and Angola being very uncertain, and the time at my disposal not permitting the possibility of delay.

Therefore, I began at the other end, and from London went down through France and by steamer to Egypt. While there is much of interest professionally in Southern Egypt and the Sudan, notably in connection with Balfour's excellent work in the Wellcome Research Laboratories at Khartoum, I was unable to make any extended stay on account of time, and crossing to Aden, proceeded to Kilindini by coasting steamer. This town in British East Africa is the port of entrance for the Uganda country.

The sanitary problem in these countries is more than vast, it appear to me practically unsolvable. Imagine a country almost the size of North and South America combined, where domestic animals can not live and where the only means of transportation is by native carriers—a country covered with impenetrable bush and jungle. Swamps and forests are inhabited by natives with the mentality of apes, who resolutely combat all sanitary measures, and above all, it swarms with insects whose bites are as deadly as the rattlesnake or cobra.

The character of the country is such that it is evidently hopeless to clear it or completely eradicate the insect pests.

Innumerable waterways exist in many sections bordered for miles on either side by impenetrable swamps supporting a growth of jungle through which a bird can only penetrate with difficulty.

*Report made to the Surgeon General, U. S. A.

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and that grows in the tropical climate faster than it can be trimmed out. Small areas can be cleared, it is true, and the higher portions of the country are comparatively healthy in places, but it would take the combined armies of the world to control the wanderings of the natives, and an inexhaustible source of infection for the insects exists in the countless wild animals that wander about the hinterland. The most plausible solution of the problem appears to me to get out and leave things as originally arranged by nature. I hardly realized until I went there how thoroughly Africa is divided up among the European powers—wherever we go, even in the interior, we find the whole place divided up into sections with boundaries as definitely marked as an American state and under the protection and management of one of the European powers.

Medical service is maintained in these protectorates by their respective governments, and in some cases a veterinary service as well. In addition to this, commissions—similar to our Philippine Board—are being sent out from Europe frequently for investigative purposes. Of these the most complete and elaborate is the Sleeping Sickness Commission of the Royal Society of London, under the direction of Dr. A. G. Bagshawe, of the Uganda Medical Staff.

The headquarters of the Bureau are in London, where, in Burlington House, in Piccadilly, reports from the medical representatives in the field are received, indexed, etc., and the more valuable matter published monthly in the Bulletin of the Sleeping Sickness Bureau.

The chief sub-posts of the Bureau are in Nairobi and Entebbe, in Uganda, where are the laboratories for research work and the hospital camps for treatment and isolation of trypanosomiasis cases. Other hospitals for general cases are maintained by the government, separate establishments being available for Europeans and natives.

Strenuous sanitary efforts are being made by the government in this district, large gangs of natives being constantly employed in making roads, clearing jungle, drainage work, etc.

The railroad from the coast up to Lake Victoria Nyanza, 584 miles, is of great assistance in opening up this section of the country for settlement.

Through this country, by the way, was the line of ex-President Roosevelt's celebrated shooting trip.

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Through the kindness of Dr. C. L. Chevallier, of the British East African Medical Service, and Dr. F. R. Brand, of the veterinary service of the same country, I was able to inspect the medical and sanitary situation fairly thoroughly. The most notable thing from a veterinary standpoint in this country is that there is nothing to treat, all domestic animals dying promptly if allowed to remain here. Wild animals thrive, however, probably owing to an immunity to trypanosome infection, which is the principle cause of death in domestic animals. Along the coast the country is rolling and covered with tropical jungle gradually rising as the coast is left until the highlands begin, about 60 miles inland, where in such provinces as Ukamba and Navasha the domestic animals are said to do fairly well.

The concensus of opinion here seems to be that trypanosomiasis need not be feared at a greater elevation than 4,000 feet.

Mombasa, the eastern terminus of the Uganda Railway, is on an island of coral formation, rough, rolling, and covered with thick bush with occasional groves of mango and palm trees. It is separated from the mainland by a narrow arm of the sea about one hundred and fifty yards across in places.

The railroad crosses to the mainland by the Salisbury bridge at Makupa.

There is practically no drainage or water supply, the Europeans catching the rain water in tanks, while the natives use water from shallow wells, strongly impregnated with salines, and undoubtedly contaminated with fecal matter.

The houses of the natives are mud and wattle huts with thatched roofs, divided into one to three rooms, with beaten earth floors. Everything is very dirty and full of vermin.

These houses are huddled together in the native quarter in indescribable confusion—narrow and very crooked alleys, possibly six feet across, separating them. No attempt at sewage disposal was apparent.

The natives here are Swahilis—well developed, fairly intelligent, and of a very similar type to our American negroes.

The European quarters are mostly built separately, each in its own compound, of the bungalow type in concrete construction.

The verandas are inclosed on the outside by concrete walls with occasional windows. This, which at first sight seems curious in the tropics, is done as a protection against the violent winds of the monsoon. The government operates two hospitals,

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one for Europeans about one mile from the town of Mombasa toward the eastern end of the island (Light-House Point), the other nearer town, for natives.

The services are entirely distinct. I found the latter of greater interest.

It is of white concrete construction with all interior angles rounded for cleaning purposes. The floors are concrete. The entrance is through the center of an administration building, which contains on the right a dispensary and store rooms and on the left the waiting rooms, offices for clerks, consultation rooms for English medical officers, etc.

An English pharmacist is also on duty here. A very similar grade to our Sergeant, First-Class, Hospital Corps. Men of this graded are seconded from Sergeants of the Royal Army Medical Corps at a pay of £200 per annum (about $1,000).

The pay of medical officers varies from $4,500 in case of the principle medical officer for East Africa and Uganda to $2,000 for temporary medical officers. The service is somewhat similarly arranged to our Civil Service, but the appointments are only for definite services and not interchangeable—that is, a man appointed to the Uganda Medical Staff can not be transferred to Nyasaland or the Indian Service, etc., all being separate.

This would seem unfortunate, as a man physically incapacitated for duty on the west coast might be capable of satisfactory service in the Uganda Highlands or the Hill districts of India.

The attendants are Swahilis, except an Indian clerk and dispensary attendant. They appeared to be excellently trained and efficient.

The wards are of the pavilion type, also of concrete construction, opening off to the left of the central driveway which leads straight back from the main entrance.

The building of additional wards on the opposite side of this road is contemplated as required. These wards are cool, roomy, and very comfortably furnished. They contain about 700 cubic feet of air space per bed.

Comparatively little operative work is done, and post mortems are next to impossible. The natives objecting strenuously to cutting in any form. The diseases chiefly met with in this locality are trypanosomiasis, filariasis, malarial conditions chiefly of the estivo-autumnal types, blackwater fever, dysentery, amebic and

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bacillary types, syphilis, tuberculosis, and many liver abscesses. Of these conditions by far the most interesting both to the profession and the laity is trypanosomiasis. In one form or another it is present throughout Africa and seriously interferes with the colonizing of the country by Europeans. The discovery of new varieties is constantly being reported.

It is probable that sleeping sickness, the most interesting form of trypanosomiasis, originally began to spread from the Congo basin in West Africa and was probably introduced into East Africa by natives in the employ of traders and explorers.

It is stated that it was first noticed in East Africa in natives of the Kampala Mission in 1901. The extension of the epidemic was very rapid and general and in the Victoria Nyanza country, where conditions are favorable, the number of deaths has been appalling. The discovery of the cause of the disease in 1903 is, in East Africa, generally accredited to Colonel Bruce of the Royal Army Medical Corps, who had been sent out by the Royal Society to investigate the cause of the epidemic—although the claims of Castellani are also advanced by many.

It will be understood in this report that no attempt at research work or originality is attempted, the nearest approach thereto being an occasional expression of opinion based on existing conditions. I have been in doubt as to whether or not to include the more commonly known species of insects and trypanosomes or to confine my remarks to the newer or more questionable varieties, but I believe a complete statement of existing facts will be preferable without any attempt at elimination. Among the long list of African trypanosomes the following are constantly under discussion by local investigators. It is claimed by some that they are all different varieties—the probability is that many of them are the same.

(1) Trypanosoma Gambiense of sleeping sickness.

(2) Trypanosoma brucei of Nagana.

(3) Trypanosoma evansi of Surra.

(4) Tryanosoma nanum of cattle sickness in Sudan.

(5) Trypanosoma dimorphon of Gambia horse sickness.

(6) Trypanosoma cazalboni of Sonma, a cattle disease in French Sudan.

(7) Trypanosoma equiperdum of Dourine in horses in North Africa.

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(8) Trypanosoma theileri of gall sickness in cattle in Transvaal and elsewhere.

(9) Trypanosoma pecandi of sheep sickness.

(10) Trypanosoma congolense.

(11) Trypanosoma vivax of disease of sheep, cattle and goats in Cameroons.

(12) Trypanosoma pecorum.

(13) Trypanosoma rhodense of sleeping sickness.

The non-pathogenic rat trypanosome T. lewisi while occuring frequently in Africa is hardly necessary to mention. Other trypanosomes apparently non-pathogenic for man or the domestic animals are—

Trypanosoma duttoni in the mouse.

Trypanosoma vespertilionis in the African bat.

Trypanosoma inopinatum in Algerian frogs.

Trypanosoma welpruitense in Angolan frogs.

Trypanosoma somalense in Somaliland frogs

The last three varieties are probably transmitted by leeches.

Trypanosoma elephantis mentioned by some investigators as occurring in the blood of elephants in North Central Africa is believed to be identical with T. brucei.

The opinion of the majority of medical men in Africa today is that sleeping sickness is conveyed by the bite of the glossina palpalis previously infected with trypanosoma gambiense. Colonel Bruce in the Sleeping Sickness Bulletin No. 6, 1908,* shows that glossina palpalis is non infective only for eighteen to twenty days after ingestion of T. gambiense and from this time on for the rest of its life it is capable of conveying the infection by its bite. This does not seem to cover the case, however. The possibility does not appear remote of the ability of this, or other species of insects to bite an infected person and by immediately after biting an uninfected person to convey the disease directly without waiting for the cycle of development to take place in the insect (Direct infection).

The discoveries in Uganda in 1903 by Col. Bruce and Castellani were positive as far as they went and since that time it would appear as if the profession as a whole had been trying to support these facts by what we might call stretched evidence—that is to say, an outbreak of sleeping sickness occurs in a new country

*This has subsequently been modified in the report of experiments of Bruce, Hamerton, Bateman, and Machie—Proceedings of the Royal Society, May 10, 1910.

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and the medical men on the ground immediately hunt for g. palpalis and probably finding them overlook other possibilities of infection.

I believe that shortly this view will be generally changed. The outbreak of the present year in Rhodesia in a section where palpalis does not exist, in patients who have never been in a palpalis infected country seems to me to warrant further investigation. The spread of sleeping sickness by sexual intercourse must also be considered. The experiments of Kudiche where trypanosomes were proved to have penetrated the mucous membrane and the well-known fact of the transmission of Dourine by coitus indicate possibilities in this direction. As a matter of fact trypanosome infection has been reported in women the only possible explanation of which was through coitus.

In the report of the French Sleeping Sickness Commission in the Congo, 1909, the theory of transmission of sleeping sickness by biting insects other than glossina is advanced.

In view of the recent Rhodesian outbreak the only safe method appears to be to treat all blood-sucking insects with suspicion until proved innocent.

The stages of sleeping sickness may be divided into Primary, Secondary, and Tertiary.

The primary or incubation stage is of indefinite duration, according to Castellani not above three weeks. Indefinite symptoms of malaise may or may not be present.

The secondary or febrile stage is characterized by irregular attacks of fever—lasting about seven days subsiding to recur later for indefinite periods. An eruption roughly circular in form and pinkish red in color is characteristic—most frequent on the trunk, and probably not noticeable in negroes. Enlargement of the lymphatic glands is another symptom to which great importance is attributed by the African medical men, especially when occurring in the posterior cervical region.

By this symptom the ability to detect incipient cases in traveling natives is alleged.

Hyperaesthesia may be looked for usually. The tertiary stage or true sleeping sickness stage begins after a variable time—usually several months. Now there is apathy, change of character and newer symptoms—tremors and possible incoordination of gait. The superficial reflexes are probably uninvolved—the pupils negative, and more or less fever persists—higher in the evening.

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Oedematous areas are common in the later stages.

The urine is negative.

Blood examination.—Red cells normal—no leucocytosis, but possibly a relative increase of mononuclear leucocytes.

The phenomenon of auto-agglutination or clumping of the red cells rather than in rouleaux formation is characteristic.

In this very concise statement of symptomatology no effort has been made at completeness—the text books on tropical medicine going into it very thoroughly; but rather to present the points emphasized by the medical men in the African field.

The microscopic examination for trypanosomes includes the examination of thick smears from ear or finger—examination of centrifugalized citrated blood in case first method fails, and examination of gland juice obtained usually from post cervical glands with a hypodermic syringe when the glands are palpable and the two previous methods have failed. Examination of scrapings from the erethematous patches is less commonly done.

I believe that the examination of cerebro-spinal fluid is done much too frequently, and that great risk is run in so doing of carrying the infection into a portion of the body which renders the case hopeless. It would appear desirable that aspiration of cerebro-spinal fluid be reserved for cases showing positive clinical evidence of involvement of the cord.

The problem of prophylaxis is tremendous and to me apparently hopeless. The actual work is chiefly included in the herculean task of clearing jungle and the detection of existing cases as early as possible, with segregation of infected individuals and removal of communities to fly free areas.

For this purpose medical officers of the government service are stationed in the localities where they will be able to inspect traveling natives to the best advantage.

Tours of inspection are frequently made through possibly infected countries.

Their chief diagnostic method seems to be palpation of the cervical lymphatics. In cases where the glands are palpable, microscopic examination of blood and gland juice is done. In cases with non-palpable glands and without febrile symptoms nothing further is done.

Those found infected are sent to the segregation camps for treatment and isolation.

Treatment appears to be very unsatisfactory so far. Hodges

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in Uganda threw a wet blanket on previous ideas by recently saying that nervous symptoms such as paralysis, paresis, and epileptiform seizures which were formerly uncommon among untreated cases are now very frequently met with and are undoubtedly due to arsenical treatment. Tendencies to sudden loss of vision have also caused greater care in the use of arsenicals.

The drugs used at present are all in an experimental stage—the perfect cure has yet to be discovered. Arsenic in the form of one of its organic salts seems to be the best so far in the opinion of the majority. Atoxyl—the sodium salt of Para-aminophenylarsonic acid—is preferably administered by *Broden and Rodhain's method—.500 gms. by intramuscular injection every fifth day.

Atoxyl was also given by them by mouth in incipient cases and injections substituted in the absence of prompt improvement. Injections of the drug into the spinal canal are not approved of. It is a generally accepted fact in Africa that arsenicals must not be administered in the form of frequent small doses, a tolerance for the drug by the trypanosomes being established thereby.

A similar preparation to atoxyl but said to be less poisonous is the drug prepared by Burroughs and Wellcome under the trade name of Soamin. This preparation is sodium-para-aminophenylarsonate, and its chemical formula is identical with atoxyl. The methods of administration are the same.

Other drugs advocated by different men are orpiment, the colloidal trisulphide of arsenic arsacetin, the acetyl derivative of arsanilic acid, arsenophenylglycin, ($As\ C_6\ H_4\ NH\ CH_2\ COOH$)$_2$ is generally accepted as the most promising of the organic arsenicals at the present time. Doses of gm. 1. are said to be borne by man.

The subcutaneous or intravenous administration of antimony salts has been tried but does not appear to have given satisfaction.

Broden and Rodham seem to approve of the combined administration of antimony salt (tartar emetic) with an arsanilate, but in East Africa I did not find any one who had much experience with the method or anything definite to say about it, and personally did not see it used.

Treatment by dyes has been tried but is not considered to be beneficial.

Work is being done at the present time in the Liverpool School of Tropical Medicine in connection with the treatment of sleep-

*Rapport sur les Travaux du Laboratoire Medical de Léopoldville, III. 1907 à 1908.

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ing sickness by cold. Medical men in Africa are doubtful as to the efficiency of the method.

The organism of sleeping sickness, Trypanosoma Gambiense, is a freely motile trypanosome about 20 mm. long by 2 mm. wide with a long single flagellum posteriorly and an oval nucleus centrally situated—the interior extremity is rounded, conical, or pointed behind which a vacuole was present in some of the specimens, and a number of chromatic granules posterior to the nucleus. Its life history is not accurately known; it shows a tendency to occur periodically in the peripheral blood—at times being impossible to find—again it may be demonstrated by puncturing enlarged lymphatics, or it may be found in the lower layers of the skin in connection with the eruption, and by puncture of the spinal canal in advanced conditions of the disease.

It is conveyed to man by the bite of the glossina palpalis after undergoing a cycle of developments in that insect varying from eighteen to fifty-four days with an average of thirty-four days, according to experiments of Bruce, Hamerton, Bateman and Machie.*

It would appear that it may also be conveyed directly and probably by the glossina fusca and other biting insects and also that there is a chance of infection through sexual intercourse.

Major Ross of the Liverpool School informed me that another trypanosome—T. rhodense—has recently been discovered giving rise in man to symptoms clinically similar to T. Gambiense but very much more virulent. He stated that the chief characteristic morphologically was the position of the nucleus which was very far to the rear. I have not seen specimens of this organism but from the description I am inclined to believe that the two varieties will ultimately prove identical.

Trypanosoma brucei.—The cause of the African disease "Nagana" in animals is a trypanosome larger than the trypanosome of surra in the Philippine Islands—its length being about 30 mm. or longer, but otherwise quite similar.

It has been cultivated on the Novy, McNeal medium, equal parts of defibrinated blood of rabbits and agar. It is believed to exist in nature in various wild animals. The glossina morsitans is a definite spreader of the disease and probably also several other species of the glossina as well as the stomoxys calcitrans. The transmission has been proved by Klein to be mechanical

*Proceedings of the Royal Society, May 10, 1910.

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and also after a true developmental process in the fly; that is, glossina morsitans after being fed on an infected animal was capable of conveying infection for the first three days—from the fourth to the ninth or tenth day was incapable of conveying infection, but from the tenth day to the sixth or seventh week was again infective.

The domestic animals generally are susceptible as well as monkeys, rats, mice, and guinea pigs.

The disease is ushered in after a period of incubation of approximately ten days by fever, oedema of the abdomen and extremities, great weakness and rapid loss of flesh.

The organism T. brucei is constantly demonstrable in the blood.

The disease is invariably fatal except in the case of cattle, a small percentage of which recover.

The treatment by arsenophenylglycin as proposed by Strong* for Surra promises well in this condition. The problem of eradicating transmissable diseases in animals is very difficult in Africa. The vast extent of the country and the impossibility of the remuneration of natives for all cattle destroyed by the government to prevent contagion, renders the subject particularly difficult.

I was told that a strong predisposing factor in the last Matabele War was the destruction of cattle by the government to prevent the spread of disease which was interpreted by the natives as simply British "cussedness."

The chief lines of action at present are fly destruction and attempts to confine outbreaks to as limited an area as possible by quarantine.

Trypanosoma evansi is an actively motile trypanosome possibly somewhat smaller than T. brucei and similar to the organism of surra in the Philippine Islands. It is cultivated in a similar manner to T. brucei. There seems to be some diversity of opinion as to whether or not there is any connection between these two varieties. There is certainly considerable similarity in many points in the symptomatology of surra and nagana.

I was unable to look into the matter as thoroughly as I could have wished owing to lack of time, and am unable to form any positive opinion.

Its occurrence in camels in North Africa is the chief cause of anxiety in this country.

*Philippine Jour. of Science, B. Medical Sciences, Feb. 1, 1910.

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It is thought here that it is spread by various flies, among others several species of glossina, tabanus and stomoxys and also by fleas.

The symptoms as in the Philippine Islands are fever, progressive weakness, oedema of the extremities, rapid loss of flesh, occasional conjunctival ecchymosis, and nerve symptoms in advanced cases. The treatment suggested by Strong promises well but has not been tried in Africa as far as I know as yet.

As an assistance in the diagnosis of nagana in cases suspected clinically but in which the parasite can not be discovered in the blood, the practice in Portuguese East Africa as I found when in that country is to inject dogs subcutaneously with blood from the suspected animal (about 5 cubic centimeters usually, owing to the virulence of T. brucei for dogs) the disease if present develops rapidly, in about eight days I was informed by the government veterinary surgeons in Lorenzo Marques and the diagnosis is thereby greatly facilitated.

I will merely mention the Trypanosoma equiperdum which is of interest to medical men chiefly as indicating the possibility of the passage of trypanosomes through mucous membrane. I did not encounter any cases in the countries which I visited on the present trip.

A great amount of discussion now seems to be taking place in regard to a number of other trypanosomes alleged by some observers to be different species, and by others to be all the same.

The organisms in question are—

Trypanosoma dimorphon—Ditton and Todd—occurring in horses, cattle, dogs, sheep, and goats in the Gambia country.

Trypanosoma congolense.

Trypanosoma cazalboni in goats in French Guinea.

Trypanosoma vivax in cattle, sheep, and goats in the Cameroons.

Trypanosoma theileri in cattle in Portuguese East Africa, Transvaal and elsewhere.

While in Portuguese East Africa I was able to compare specimens of a number of the organisms above referred to. I feel rather a delicacy in expressing any positive opinion upon a subject about which so many specialists disagree, but it would seem possible that the slight variations in morphology of the organisms, and the clinical symptoms produced by them might be due to variations in the breeds of animals affected, climate, altitude, etc., and that many, if not all, of them are the same.

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An article from the proceedings of the Royal Society, June, 1910, by Colonel Bruce, Captains Hamerton and Bateman, R. A. M. C., and Captain Machie, I. M. S., recently furnished me by the Director of the Sleeping Sickness Bureau proposes the name Trypanosoma pecorum for this group.

The agar eosin method of staining for trypanosomes proposed by Giemsa as used in Portuguese East Africa seems to give the best results, distortion of specimens in drying being thereby largely eliminated. The method is published in the Deutsche Medizinische Wochenschrift, 7 Oct., 1909.

1. Fix in Schandinus sublimate alcohol (concentrated aqueous solution 2 pts., absolute alcohol 1 pt.) for 24 hours or longer.

2. Wash in water, and 5 to 10 minutes in solution of potassium iodide 2., aq. distil, 100., Lugols solution 3.

3. Wash in water and for 10 minutes in five per cent aqueous solution of sodium thiosulphate, removing thereby the yellowish color imparted by the iodine.

4. Wash in running water for five minutes.

5. Stain with freshly diluted Giemsa's solution (1 drop in 1 cc. further diluted if longer staining is desired) one to twelve hours, renew stain after first half hour and again from time to time.

6. Wash in water and pass through.

(a) acetone 95 c.c. xylol 5 c.c.
(b) acetone 70 c.c. xklol 30 c.c.
(c) acetone 30 c.c. xylol 70 c.c.
(d) pure xylol.

7. Mount in Canada balsam.

The subject of biting insects is one of tremendous interest to all Europeans in Africa, from the Sudan to Cape Colony and across to the Atlantic a constant topic of discussion is "the fly," not the common house fly, which in many districts is remarkably scarce, but the blood-sucking Tsetse flies; mosquitoes dwindle to unimportance in their presence.

I was unable to obtain specimens of the glossina fusca and the stomoxys specimens which I caught in Egypt were unfortunately broken up on the coasting steamer in crossing to Aden but a fair number of others remain with two good specimens of the glossina palpalis, and a number of the African mosquitoes. Stegomyia by the way are comparatively plentiful along the coast. There are countless varieties of biting insects in Africa, many of them deadly and all to be viewed with suspicion.

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Of these it is my intention to mention the varieties which are creating the most interest locally and with which most work is being done by medical men in Africa.

The genus glossina was first named by Wiedemann in 1830, since then thirteen species have been recognized; until recently the accepted classification was as follows:

Glossina palpalis, Rob. Desv.
Glossina morsitans, Westwood.
Glossina fusca, Walker.
Glossina longipennis, Corti.
Glossina longipalpis, Wied.
Glossina pallidipes, Austen.
Glossina tachincides, Westw.
Glossina pallicera, Bigot.

During the past few months, however, five new species have been positively differentiated by Austen, viz.:

Glossina caliginea.
Glossina robusta.

and three other species which he has not yet named. Through his courtesy I was given the opportunity to examine specimens of all these flies. The differentiating characteristics as described by him undoubtedly exist. It will probably be better to wait for his own account to be published rather than to attempt a premature description. Another species has been named and described by Newstead of Liverpool, the glossina obfuscata. Austen declined to make any positive criticism but is inclined to think that it is the same as G. morsitans.

Newstead subsequently informed me that he had changed the name of G. obfuscata to glossina submorsitans, and insists that it is a distinct species from G. morsitans. I was unable to see any difference other than might be due to variations in food supply and natural conditions. Newstead has made some very marked changes in his classification of glossina. He divides this genus into three groups according to the formation of the claspers. His classification follows:

Group 1 (Fusca group) all large species 10¾ to 12 mm. (superior claspers without connecting membrane.)

g. longipennis, Corti.
g. brevipalpis, Newst.
g. fusca, Walker.
g. grossa, Bigot.

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Group II (Palpalis group)* hind tarsi all dark (superior claspers connected by a membrane.)

g. palpalis, Rob. D.
g. tachinoides, Westw.
g. fuscipes, Newst.
g. pallicera, Bigot.
g. maculata, Newst.

Group III (Morsitans group) tips of all tarsi dark (claspers united.)

g. morsitans, Westw.
g. submorsitans, Newst (formerly g obfuscata.)
g. longipalpis, Wiede.

I am unable to form a positive opinion as to the relative merits of these classifications but rather incline toward Austen's views.

Glosina palpalis is common throughout the equatorial belt of Africa. Its limits appear from reports received by the Sleeping Sickness Bureau to extend from 15° North on the west coast and 8°on the East as far South as 12° S. These limits would include the country from Angola to Sierra Leone and from the Zambesi† to the Sudan.

These flies do not lay eggs like the majority of diptera, but produce a larva composed of ten or twelve segments in all about the size and somewhat the shape of a grain of corn, but more oval at one extremity, and with two small protuberences at the other. It is of a yellowish color at first and moves about fairly vigorously, burrowing into dry earth, elephant dung, etc., and changing shortly into a hard black pupa or nympha, from which, in a period generally accepted as about six weeks, the fly develops.

These flies are comparatively insignificant looking, but little larger than the common house fly and of a dusky brownish oak color. A very noticeable point is the position of the wings, which when at rest overlap like a pair of shears.

The proboscis extends in front of the head in prolongation of the body axis, i. e., horizontally when the fly is at rest.

The abdomen is flattened, tapers toward the anal extremity and is covered with short dark hair; a pale triangular patch is noticeable on the abdomen at the thoracic junction. The last five joints of the hind legs are black; this and the pale abdominal

*The Glossina caliginea of Austen belongs to this group.
†Austen doubts the existence of g. palpalis in the Zambesi Valley.

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patch are the chief points of differentiation of glossina palpalis from the other species of glossinae. See Fig. 1.

I made this sketch and those on the following pages from flies which I obtained in East Africa; my classification was verified by Austen, of the British Museum. The upper figure is en-

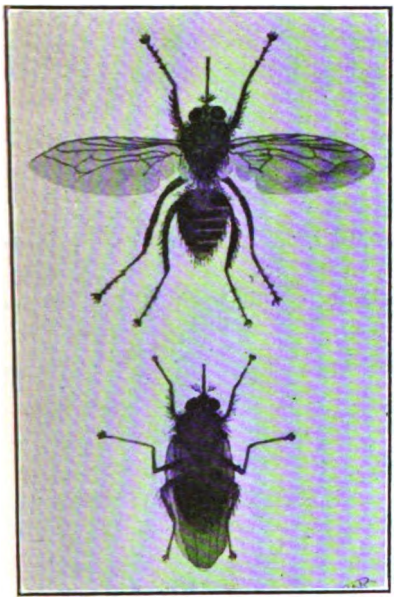

Fig. 1. GLOSSINA PALPALIS.

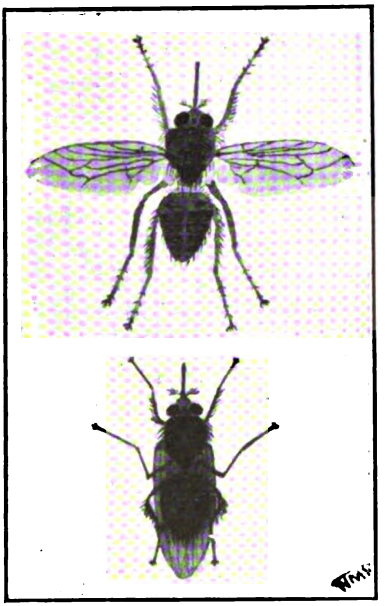

Fig. 2. GLOSSINA MORSITANS.

larged approximately five times; the lower illustrating the resting position of the wings is enlarged about three times.

G. palpalis may be looked for during the warmer portions of the day only and is not apt to be encountered in the early morning or after sunset. It is an insect of rapid but stealthy flight and quite difficult to catch. It is frequently found under the thwarts of canoes or under the seats of railway carriages, in which manner it may be carried long distances.

It is usually found along shady banks, close to water and where the underbrush is thick.

Cleaning out the scrub growth is said to drive them away. The general opinion in this country is that they do not travel further than thirty yards from water unless following men or animals. They are more numerous in the wet season. They are believed to live on the blood of big game and crocodiles as well as man.

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Extensive experiments are now being made in connection with foods possible for glossinae. Some authorities claim that vertebrate blood is necessary for their existence, but the fly have been found in places where such food could not possibly have been procured.* The question does not appear to have been settled positively as yet. Actually swampy ground is not favorable for the development of the fly.

The Glossina morsitans is eight to ten millimeters in length, light brown in color with five dark transverse abdominal bands interrupted in the median line.

The head is comparatively narrow, the hind tarsi are not totally dark and the tips of the last two joints of the front and middle legs are dark brown or black.

The accompaning sketch is of the g. moristans, enlarged about five times in the upper figure and three times in the lower. The glossina longipalpis is the same with wider head and deeper abdominal bands.

Glossina pallidipes.—Same with last two joints of front and middle tarsi light colored.

Glossina fusca.—Large fly, 11 to 13 mm., light brown, without spots.

Glossina robusta.—Same, but ruddier color and shorter proboscis.

Glossina longipennis.—Same, but with four black spots on dorsum of thorax.

Glossina tachinoides.—A small yellowish brown fly; hind tarsi all dark; dark transverse abdominal bands interrupted in the median line, with light square in centre of second segment.

The various species of glossinae differ somewhat in color and size, but the general characteristics are largely similar.

Glossina morsitans shows a preference for the blood of wild and domestic animals, but will bite men at times.

A large number of other biting flies are constantly encountered in Africa, specimens of some of which I was able to obtain, among them are the stomoxys, the most common variety being the S. calcitrans, an indiscriminate biter of man and animals and probably instrumental in spreading trypanosomiasis. It is a small grayish fly with black markings, considerably like the common house fly. The head is somewhat raised while at rest and the wings diverge behind while in contact at their bases. The proboscis is smaller than in glossina. They lay eggs in de-

*Monograph of E. E. Austen on Tsetse flies.

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composing organic matter, which develop into flies in about thirty days.

Specimens of the Tabanidae family are also common. They lay spindle-shaped eggs in water and the larvae develop in water or damp soil. They are possible conveyors of trypanosomiasis. This family is divided into the sub-families tabaninae and pangoninae, several varieties of which I was able to secure. An interesting specimen also in the anchmeromyia luteola—the floor maggot fly. See upper sketch, Fig. 3. This fly lays its eggs in Kaffir huts in inner contaminated ground for choice. The larvae developing from these eggs are blood-suckers, but are not considered as disease carriers by the local medical men.

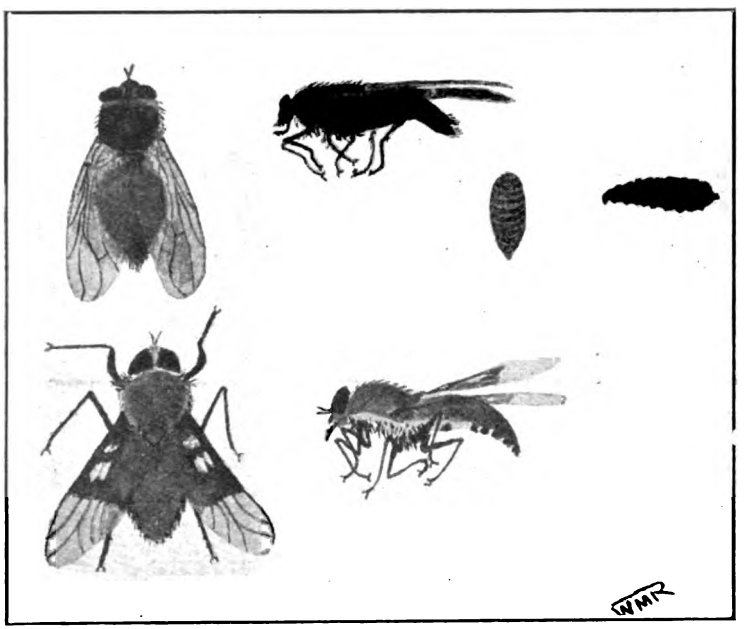

Fig. 3. AUCHMEROMYIA LUTEOLA A. L. MAGGOTS, LIFE SIZE. TABANUS AFRICANUS.

The figures of the larvae in the upper right hand corner are life size, the darker being engorged with blood. The figures of the fly are enlarged approximately three times.

From British East Africa I went on to German East Africa. The character of the country is very similar. The chief towns are Tanga and Dar-es-Salaan, the latter the centre of the local government.

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Railroads run up into the hinterland as far as Mombo and Morogors, about one hundred and sixty miles from the coast.

The general sanitary conditions are excellent and the hospital facilities all that could be desired; large well-equipped buildings as usual of concrete construction. An efficient corps of German female nurses and native orderlies (Swahilis) are available. The Germans in dealing with colonizing problems are apparently untrammeled by narrow-minded views from the home country and do what they know to be for the best interests of the individual and the community. Thus, if they see sanitary defects they are rectified and the natives co-operate; they are possibly persuaded to do so with a club, but they co-operate enthusiastically in the end. The towns are clean and the native quarters wonderfully well kept.

In British East Africa the labor problem is difficult, and much thought and ingenuity is expended on methods for persuading the natives to work. They work in German East Africa industriously and the persuasive methods employed are cheap and very efficient.

Conditions as to trypanosomiasis and other diseases are largely similar to British territory.

Domestic animals die promptly in the coast belt here, but do fairly well in the higher altitudes of the hinterland.

Practically all the transportation outside of the railroad traffic is done by natives. Travel is chiefly by means of the "machila" teams, eight men carrying a hammock swung from poles and covered with an awning, four men carrying this apparatus at a time, the other four men of the team accompanying them and relieving the first lot when necessary. They can cover thirty miles or more in a day through the jungle trails without trouble.

Sixty pounds is the normal single load, usually carried on the head.

From this country I crossed to Zanzibar, a four hour run by steamer across the straits. I found the country to be remarkably free from the serious diseases of the African mainland. An efficient sanitary department is making rapid progress in still further diminishing the death rate by drainage of swamps and other hygienic measures.

If this report were not limited to professional subjects, I would be tempted to enthuse over the beauties of this country, its excellent roads and picturesque plantations, but such irrelevances

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would hardly be allowable under present conditions. From Zanzibar I went over into Portugese East Africa landing at Mozambique.

This town is on a small coral island, tucked into an indentation of the coast.

The place is very much out of the world, the streets almost deserted and while superficially clean, apparently, is very unhealthy—malignant malarial conditions, dysentery, and other tropical diseases being very prevalent.

The old Portugese fort at the northern point of the island is garrisoned by a few native troops under Portugese officers.

Sanitation is generally primative.

The surrounding country is low and very unhealthy. From Mozambique I went to Chinde at the mouth of the Zambesi river and from the Zambesi valley to the southern part of Portugese Africa where in Lorenzo Marques I was offered every facility and courtesy by the Portugese officials, notably Dr. J. F. Sant Anna the director of the Government Hospital.

At the veterinary bureau also I was given opportunity to see the various phases of animal trypanosomiasis and pyroplasmosis, which diseases are very prevalent in this coutry. From this point in East Africa railway communication is possible with South Africa generally and travel is easy, sleeping and dining cars being available with all modern conveniences.

I went from Lorenzo Marques into Natal and thence to Cape Colony.

In Natal especially many cases of bilharzia are encountered.

Large modern cities are numerous in South Africa with up to date sanitation, well kept paved streets, electric light and train service, etc., etc.

The general health of the people is good and the diseases of domestic animals, while still present to some extent, are vastly diminished.

The native population is reported as increasing largely throughout East Africa, chiefly in view of the abolishment of intertribal wars, human sacrifice and the establishment of improved sanitation.

It had been my intention to return to the United States from South Africa by the Congo, Camerons, and Nigeria, steamer connections from these countries to Madeira being frequent. I could have made the trip in about six weeks but there is only

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about one coasting boat per month going up from South West Africa to the Congo where the frequent services to the north begin, and after rushing up to Suderitzbucht and Swakopmund in German South West Africa from which ports the steamer was scheduled to sail, I found that since I had left Europe the sailing date had been changed and the boat had already left. Another boat was leaving the same day, however, for Grand Canary, and I was forced, in view of my leave of absence having nearly expired, to miss the west coast and start for home by a more definite route than chance cargo boats.

From Las Palmas in Grand Canary I went on to Teneriffe and thence to the United States via England.

On returning to England I visited the Liverpool School of Tropical Medicine with a special view to seeing the results of the treatment of trypanosmiasis by cold. Major Ross has been trying this method out thoroughly in animals and in one case of sleeping sickness in man, and was hopeful of good results.

The patient was treated by cold—intermittently of course—from January 5th to 31st of last year. Arsenical treatment was given at the same time. The number of trypanosomes did not diminish. The man subsequently died. I am under many obligations to Dr. A. G. Bagshawe, director of the Bureau of Sleeping Sickness of the Royal Society, for all possible courtesies during my stay in London, every facility being furnished me for consultation of references, the offer of the use of the Government setamer on Lake Victoria Nyanza in visiting sleeping sickness camps, introduction to the Society in London, etc.

I am also particularly grateful to Mr. E. E. Austen, honorary consulting entomologist for the British Museum, for the interest and trouble which he took in personally classifying the specimens of flies which I brought back from Africa.

I desire, in conclusion, to repeat that in this report no attempt at originality is contemplated. The short time at my disposal in any one place precluding the possibility of research work of any kind.

It was my idea to see personally what work was being done on subjects, and in a country which have always been of great interest to me, and I have tried to set down herein what I saw or was told by investigators in the field.

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REPORT OF CASE OF RABIES AT CAMP OVERTON, MINDANAO, P. I.

By 1st Lieut. O. Weston, M. R. C., U. S. Army.

MY only apology for reporting this case of rabies is, first, because of the fact that this disease has always been considered very rare in the Philippines, and, second, because it has also been an unusual cause of death in the United States Army, so far as I can ascertain no fatality from this disease having occurred for several years. Rabies has, indeed, been considered so extremely rare in the Philippines that no measures for the prophylactic treatment of the disease have been instituted until very recently.

The following case came under my immediate care and observation while on duty, as ward surgeon, at the military hospital at Camp Overton, Mindanao, P. I., on March 20th, 1910. I think that it contains certain peculiar points of interest which will warrant my reporting it in The Military Surgeon. It is especially apropos at this time, because of the recent establishment of the Pasteur treatment at the Bureau of Science at Manila, which has been done after a careful investigation of the prevalence of rabies in the islands.

I give the bedside notes on the case as follows:

Peter ————, private, Troop I, 2d Cavalry; aged 55 years; single.

Family History—Negative.

Previous History—Patient served for a long period in the U. S. Army, being about to retire in two months at the time of his death.

He has lived a hard life, having spent four years in Alaska and served in the army in Cuba and the Philippines.

No history of previous illness. Habits good; drank very little.

About January 3d, 1910, patient was bitten by a supposedly rabid dog, while serving in the 1st Cavalry at Camp Stotsenburg, P. I.

The wound was situated on the right wrist. It was not cauterized, nor even dressed, seeming to be of a trivial nature. It healed readily, with no eruption surrounding it.

The entire head of the dog was sent to the Bureau of Science

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at Manila, but was in such a decomposed condition on arrival that no examination could be made of it.

Patient showed no signs of sequelae from the bite until March 17th, after he was transferred to the 2d Cavalry and arrived for duty at Camp Overton. At this time he was observed to be nervous and melancholy without any apparent cause.

Present Illness.—On March 20th he began to feel ill; this illness increased on the 21st to such an extent that he was obliged to report at sick call for treatment. He complained of nausea, loss of appetite, and general malaise; he was nervous, depressed, and easily fatigued, having been obliged to lay down to rest that morning while out with his troop.

At 3:30 a. m. of the 22d patient was found walking up and down in his troop barracks, gasping for breath and apparently in great distress, showing signs of dyspnoea, and grasping his throat with his hand, being unable to talk, except in a sort of "jerky" manner. On being admitted to the hospital and attended by a surgeon (at 4 a. m) he was found to be suffering most acutely, seemingly from dyspnoea and aphasia. But on being more closely observed it was noted that he could utter words of one syllable, like "yes" and "no," and that his dyspnoea was of a spasmodic variety. His pupils were moderately dilated and equal. He was perfectly conscious and his mind clear. During one of his paroxysms he showed some signs of cyanosis; but a physical examination showed perfectly clear, vesicular breathing, with heart action normal, but rather slow (55).

Patient's only symptoms seemed to come from a spasm of the muscles of the larynx, these spasms coming on at intervals of about every three minutes, with alternating periods of comparative ease. At 8 a. m., when examined by the ward surgeon, the patient's mental condition was much aggravated, there being extreme restlessness and great fear of impending death; there was a look of anxiety and terror on his face, which no amount of reassuring could efface.

He only spoke the shortest words with the greatest of difficulty, and then only at long intervals. When urged to speak, he would make the effort, generally ending in uttering some harsh, gutteral sound, once or twice in the course of several hours managing to say "yes" and "no." Every effort at speech seemed to throw him into a spasm, when he would jump up in bed, and rock back and forth, holding on to his throat, with the appearance of the most unutterable anguish on his face.

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When given a pencil and paper, he grabbed them and wrote in a quick, jerky fashion, "I die;" "I am frightened." Even this effort always threw him into a spasm. This spasm was entirely confined to the muscles of the throat, there being no spasm of any of the other muscles of the body or anything resembling a convulsion.

Sensibility was, if anything, more acute than normal. Muscular co-ordination was perfect; reflexes were increased. Any outside stimuli, like the advent of any one in the ward or a person walking across the floor, would throw the patient into a paroxysm.

He complained of no pain whatsoever, except when these convulsive spasms of the larynx occurred, and in the interim seemed comfortable.. Temperature was normal; pulse, 54 per minute; respiration, 20.

When asked if he had any pain anywhere in his body, he shook his head. Morphia and chloral were tried in large doses to control the laryngeal spasms, ¾ grain of the former and 20 grains of the latter being administered without any apparent effect during the morning. Hyoscine hydrobromate given hypodermically seemed to have a little effect in lessening the severity of the spasms. It was noted that he took the chloral, which was in solution, with the greatest of difficulty, every effort at swallowing starting up one of the convulsive spasms of the muscles of the throat. It was this phenomenon which first led to the suspicion of hydrophobia, and prompted the questions which elicited the history of the patient being bitten by a dog in January.

The history was entirely confirmed by two witnesses afterwards. During the whole forenoon the patient's mind was clear, and the clinical picture was that of a man suffering the most intense mental anguish. At 1 p. m. his mind began to "wander," and he showed signs of hallucinations, with periods of acute mania alternating with muttering delirium, when it was with the greatest of difficulty that he was confined to his bed. Any noise seemed to arouse him and send a thrill of terror through him; he would utter the most unintelligible sounds, sometimes simulating those made by an animal.

About the middle of the afternoon he began to salivate very freely, the saliva increasing in volume and finally taking on a greenish appearance; during the evening he soaked several towels with this greenish, frothy saliva. He steadily refused food and drink, not being able to swallow. Every attempt at eating or drinking seemed to give him excruciating pain and start a spasm,

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from which he would fall back on the bed completely exhausted; in fact, he ate nothing during the whole time that he was in the hospital and only drank the chloral given to him early in the morning. The fear of impending death clung to him up until he became completely unconscious.

The patient relapsed into the second stage of the disease about 6 p. m. of the 22d, becoming quieter, the spasms no longer occurring.

Unconsciousness gradually supervened, and with it his heart grew steadily weaker, until he finally died at 3 a. m. (23d).

Autopsy Report (Made by Lieut. F. S. Wright, Med. Corps).

Time, 9:30 A. M., March 23d, 1910.

Rigor mortis very marked. Subject well developed, poorly nourished. Estimated weight, about 135 pounds. Opacities forming on both eyeballs.

Head.—Removal of skull cap. Cerebro-spinal fluid excessive. Meninges much thickened. Dura mater adherent to skull, dense adhesions. Vessels on surface of brain markedly congested. No signs of any tumor, gumma, or abscess.

No evidence of any embolism or brain hemorrhage. Wt. (of brain) 48 ounces. The entire brain with the medulla, pons and cervical section of the cord was removed and placed immediately in a weak solution of formalin for subsequent examination.

Chest.—Pleuritic fluid normal. Pleura shiny, normal. Lungs normal (few fibrinous nodules in both). Post bronchial glands slightly enlarged.

Heart.—Normal in size and position. Valves all normal except for a fatty appendage 6 in. long, attached to the lower portion, anterior segment of the tricuspid valve, and from the base of the cavity of the right ventricle. This appendage extended upwards through the pulmonary orifice, and through the pulmonary artery into each pulmonary artery for about one inch, and was finally attached to the wall of each artery. This structure had a base composed of muscle fibres. It appears to be a congenital condition, having nothing to do with the cause of death. No signs of thrombosis or embolism.

Larynx.—Slightly congested. Otherwise normal. Oesophagus normal.

Abdomen.—Panniculus adiposus small amount. Peritoneum normal. Liver normal in size and structure. Gall-bladder normal in size. No stones. Stomach and intestines normal. Pancreas normal. Spleen normal. Kidneys, capsules slightly thickened and adherent.

The brain was sent to Major Whitmore, Med. Corps, at the Bureau of Science at Manila, P. I., who reported that he found the brain normal, except for the thickening of the meninges mentioned above. A careful microscopical examination of stained sections failed to show the presence of the Negri Bodies

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Current Literature.

Titles marked with an asterisk (*) are abstracted below.

BELGIUM

Archives Medicales Belges.

December, 1910.

1 Climato-therapy. Lejeune, M.
2 Retro-bulbar Ocular Paralysis. Delwarde, M.

C. F. CRAIG.

FRANCE

Bulletin de L'Académie de Médecine.

January 10, 1911.

3 Pyelotomy for Removal of Calculus of the Kidney. Report upon, by Le Dentu, M.

January 24, 1911.

4 *Report of Committee upon Antityphoid Vaccination. Vincent, H. Reporter.

4. **Antityphoid Vaccination.**—The entire number of the Bulletin for Jan. 24th, 1911, is devoted to the publication of the report upon antityphoid vaccination by the committee appointed by the Academy of Medicine. The committee consisted of Doctors Chantemesse, Chauffard, Delorme, Kelsch, Landouzy, Netter, Roux, Thoinot, Vaillard, Widal and Vincent, and their report is a very full summary of what has been accomplished by antityphoid vaccination.

After briefly reviewing the history of the subject, the committee reports upon the following methods which have been employed in vaccinating against typhoid: 1. The use of living cultures of the bacillus, (Castellani). 2. The use of cultures killed by heat, (Pfeiffer and Kolle, Wright). 3. The use of cultures killed by the addition of an antiseptic, (Semple & Matson). 4. The use of killed cultures combined with antityphoid serum, (Calmette, Salimbeni, etc.). 5. The use of triturated cultures of the bacillus, (Friedberger and Moreschi). 6. The use of extracts of the typhoid bacillus, (Wassermann, Brieger and Meyer, MacFadyen and Rowland), and 7, the use of a vaccine prepared

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by chemical methods, (Brieger and Schutz, MacFadyen and Rowland). After a careful consideration of the various methods the committees concluded that the most lasting results are obtained from the use of vaccines prepared after the method of Wright, i. e., of cultures killed by heat.

The practical results obtained by the use of antityphoid vaccination are next considered and the following tables, taken from the many given in the report, will illustrate the beneficial results which have been obtained.

At Ladysmith, during the Boer War, the following results were obtained:

		Morbidity.	Mortality.
Vaccinated,	1,705	35 cases 2.05%	8 deaths 0.47%
Unvaccinated,	10,529	1,489 cases 14.14%	329 deaths 3.13%

At Modder River there occurred 26 cases among 2,335 vaccinated, and 257 cases among 10,981 unvaccinated.

The following figures are quoted from Leishman which cover the results obtained in the English Army up to July, 1910:

Among the vaccinated the number of cases of typhoid per 1,000 men was 5.39, while the mortality per 100 cases was 8.9; among the unvaccinated the number of cases of typhoid per 1,000 men was 30.4, while the rate of mortality per 100 cases was 16.9.

Of 216,811 soldiers stationed in the English colonies and unvaccinated, 4,677 developed typhoid fever or 21.5 per 1,000; of this number 1,018 died or 4.68 per 1,000 men. Of 28,110 vaccinated men, 215 developed typhoid or 7.29 per 1,000, and 34 died, or 1.20 per 1,000 men.

The committee instances the figures of Eichholz as illustrating the favorable effect of vaccination upon the course of the disease. Eichholz compared 34 case of typhoid occurring in the vaccinated and 34 occurring in the unvaccinated with the following results:

	Unvaccinated.	Vaccinated.
Deaths	8.8 per 100	0
Grave complications.....	22.6 per 100	8.8
Fever above 40° C.....	79.2 per 100	48.3
Duration of fever.....	14.8 days	12.5 days.

There are many other data in this report illustrating the efficiency of antityphoid vaccination, among them the results reported by Major Russell, in our own army.

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The committee agrees that the so-called negative phase of Wright is of little practical importance, and they conclude that the evidence regarding antityphoid vaccination justifies the following conclusions:

1. Antityphoid vaccination has been applied with success in the English, German and American armies.

2. That this measure markedly reduces the morbidity and mortality of the disease.

3. That three injections of the vaccine give much greater protection than one or two.

4. That the measure is without danger when properly controlled.

5. That the measure should be adopted in the French army and navy, especially in troops serving in Algeria, Tunis, and the colonies.

6. That the duration of immunity is longer after the use of vaccine prepared according to the method of Wright.

7. That antityphoid vaccination is especially applicable to and should be used by,

a. Doctors, internes, and students of medicine in infirmaries and in civil and military hospitals.

b. Carriers of the germ and the families of individuals in contact with such carriers.

c. The young of both sexes in regions that are endemic centers of typhoid fever.

d. The population of regions in which epidemics frequently occur.

e. The army and navy, both officers and men, before going into any region in which is endemic or epidemic.

The commission concludes that antityphoid vaccination is a rational and practical method of sensibly diminishing the frequency and gravity of typhoid fever in France and in the colonies. C. F. CRAIG.

Archives de Médecine et de Pharmacie Militaires.

January, 1911.

5 The treatment of nocturnal incontinence of urine by injections of serum into the perineum. Delamare.

6 Two cases of Malta fever in the garrison of Montpelier. Vedel, Papon and Tartarez.

7 *Note on the etiology of goitre. Chevrant.

8 Appendicoceles. Bergasse.

9 Contusion of the right flank; persistant haematuria with severe exacerbations. Galzin.

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10 Penetrating wound of the abdomen from a dog bite with hernia of the omentum. Long.
11 Quick determination of the dietetic value of milk. Dosage of bacterial catalases. Measurement of catalysis. Sarthou.
12 Transportation of the wounded in high mountains. The Brancard-Ski-Morrisson.
13 Clement Joseph Tissot, the forerunner of modern physical therapy. Armand.

7. **Goitre.**—A young woman from the Department of the Meuse, where goitre is unknown, went to upper Bavaria in 1907 and drank water from two springs, upper and lower. About a year later she noticed a fullness in her neck. A local doctor diagnosed an incipient goitre and forbade the use of the water of the upper spring which had the reputation of causing goitre. She returned to France with a well developed goitre but under thyroid extract and application of tincture of iodine all evidence of disease disappeared in less than two months. Chevrant records the case as being almost an exact experiment in the production of the disease. H. J. NICHOLS.

Archives de Médecine Naval.

January, 1911.

14 *Instructions of the Under Secretary of State relative to the prophylaxis of typhoid.

14. **Prophylaxis of Typhoid.**—In view of the recent epidemic of typhoid at Annapolis, the origin of which seems to be unascertained, a circular of instruction, issued by the French Under Secretary of Marine, deserves careful study by the medical officers of the U. S. Navy.

This document is dated Sept. 30, 1910, and contains a consideration of form of typhoid infection, mode of contagion, prophylaxis, hygienic education, and laboratory work.

Some unusual but established agencies of propagation ("agents vecteurs"), are emphasized, viz:

Flies.—Epidemics by the carrying of germs have been established, in certain camps, and barracks, in which the water-closets were near the kitchens.

Dogs—Transmission by dogs has been noted. Dogs become carriers of the disease by ingesting material, thrown, or spilled in courts, or other localities.

Shoes—This method is the result of badly lighted and imperfectly policed closets and lavatories; faecal material entering the soles, and seams of shoes, is thus transported.

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Inter-human Contagion—Numerous and precise facts of contamination by carriers of the germ, established that inter-human contagion should be considered an important factor in the dissemination of typhoid infection. When an agglutination has led to a search for the origin of a typhoid epidemic, and when the water and food are above suspicion, it is indispensable to proceed to a minute inquiry, into the disease antecedents of the personnel especially that of the cuisine. Here we find subjects carrying pathogenic germs; some convalescent from typhoid, others who have evinced only backache, gastro-embarrassment, or jaundice, and still others who appear healthy, because they are immune by idiosyncrasy, heredity, or previous unrecognized attack. These chronic carriers are recognized by an examination of the excreta (stools and urine), the diagnosis being confirmed by the specific properties of the sera.

Anti-typhoid Vaccination—Reduced morbidity four times less than among those who did not submit to the prophylactic measure.

JOHN C. WISE.

Le Caducee.

January 7, 1911.

15 *Insanity in the Army.
16 Gynecology in Madagascar.
17 Strangulated hernia of the stomach.
18 *The service of regimental medical officers.
19 *Treatment of Ankylostomiasis.

15. **Insanity in the Army.**—At the International Congress on Aid to the Insane, held in Berlin, last October, the question of insanity in the Army and the duties of medical officers in regard thereto was earnestly discussed. Dr. Pactet has formulated a series of propositions which embody the views of psychiatrists and of medical officers. They are briefly as follows:

Insane soldiers have a pernicious influence upon the Army; conversely, the Army exerts an unfavorable effect upon soldiers with latent predisposition to insanity. The rate of insanity in the French Army is about 0.6 per thousand. Most cases come from among soldiers who have voluntarily enlisted; hence the necessity of inquiring into the habits, antecedents and medical history of all volunteer applicants, as well as of a careful search for stigmata. The forms of mental diseases observed among soldiers do not differ from those noticed among men of the same age in civil life; there is no special military psychosis. For this technical examination it is desirable that all medical officers should follow,

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for three months, a special clinical course in mental diseases, and that a certain number of them should make a specialty of these diseases after a course of one year in a suitable asylum. A commission consisting of three competent medical officers, acting directly under the authority of the minister of war, should meet at the headquarters of each military division as often as may be necessary for the examination of such men as would be brought before it upon the recommendation of the regimental surgeons. Military hospitals should have a section reserved for the examination and treatment of men suspected of mental derangement. The inmates of all military prisons should be inspected, once a quarter, by an alienist medical officer.

18, **The Service of Regimental Medical Officers.**—The statement made in the Gazette de l'Armee, noted in a previous number of the Caduceé, that the situation of the regimental surgeons is very unsatisfactory on account of the removal of their patients to outside hospitals with which they have no official connection, appears to have been largely inexact. It only applies to large cities. For instance, the fifth corps garrisons Orleans and 13 other towns. In Orleans is a military hospital, with special personnel, to which all sick and wounded soldiers are sent; after their admission the responsibility of the regimental surgeon ceases. In the other 13 garrisons, the patients are indeed sent to the town hospitals but remain under the direct personal care and treatment of the regimental medical officers. But even in large cities. these officers are at liberty to visit as frequently as they wish not only the military but also the civil hospitals. Nevertheless, it is true that in all cities provided with special military hospitals, it is possible for the garrison medical officers, inclined to do so, to confine their attention to preventive medicine and the trifling cases retained in the regimental infirmaries.

19. **Treatment of Ankylostomiasis.**—Dr. Wyn, of Nagami. Dutch East Indies, recommends the folowing mixture:

Eucalyptus oil, 2.5 gram.
Chloroform, 3.5 gram.
Castor oil, 40. gram.

To be taken fasting in two parts, at two hours' interval.

One dose is generally sufficient; two doses are always successful.

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January 21, 1911.

20 *Assimilated Officers.
21 *Case of Trypanosomiasis in a Military Surgeon.
22 *Society of Tropical Pathology.

20. **Assimilated Officers.**—(Les assimilés). As previously noted, medical officers in the French Army have no military rank and therefore are not officers. They are functionaries with assimilated grade. Thus, to designate, in one phrase, the majors of the line and the military surgeons of corresponding grade and pay, the official expression is "The majors and assimilés." This situation is for them, naturally, a source of deep humiliation and discontent.

21. **Case of Trypanosomiasis in a Military Surgeon.** —(Dr. Kerandel), described by himself. In this case, treatment by injections of atoxyl was only partly and temporarily successful. The symptoms returned and remained practically unaffected by this drug. It was then replaced by intra-venous injections of tartar-emetic which were promptly followed by a complete and radical cure.

22. **Society of Tropical Pathology.**

Leprosy.—Dr. Jeanselme, of Paris, made the rather startling statement that there are from 100 to 200 lepers in Paris. In the St. Louis Hospital there are always about a dozen. There is no law regarding leprosy or the sequestration of lepers in France.

Beriberi.–Dr. Couvy has observed an epidemic of this disease in Mauritania which, in his opinion, is plainly attributable to the use of rice. The deplacement of rice by other food was soon followed by the cure of the patients, without any other treatment, whereas they promptly relapsed upon the resumption of the rice diet.

Dr. Sorel, on the other hand, describes an epidemic of Beriberi on the Ivory Coast, in a country where the use of rice is totally unknown.

GERMANY

Deutsche Militararztliche Zeitschrift.

January 5, 1911.

23 *Florence Nightingale d. 13, 8, 1910. Gustave Moynier d. 21, 8, 1910. Henry Dunant d. 20, 10, 1910. Georg Korting.
24 Directions for Fighting about Fortifications; explained by Georg Schmidt.

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25 Gymnastic Exercises for Infantry; explained by Georg Schmidt.
26 Jean Dominique Larrey's Memoires and the Sanitary Service of the French Army under Napoleon. Hans Kritzler.
27 Follenfant's Studies of the Sanitary Service in the Campaign of 1910. Adam.

January 20, 1911.

28 The Origin and Proper Conception of Hernias. Thole.

23. **Florence Nightingale.**—During 1910 three important figures in voluntary relief work died after living long lives and seeing their work highly successful. Miss Nightingale at the age of 91, Moynier at 85, and Dunant at 83.

Miss Nightingale and a number of voluntary nurses went to the Crimean War without the sanction of the official medical service. Her labors in the care of the sick and the organization of hospitals have become historic and on her return to England she shared honors with the fighters.

The rest of her life was devoted to developing her work and the founding of schools for nurses at Thomas Hospital and Kings College. The Government and especially the Army was represented at her memorial service held in St. Paul's Cathedral.

Moynier and Dunant, both Swiss, belong together in any mention of their work. In 1862 Dunant, as a result of experience in the War of 1859, proposed an international association of voluntary nurses who should prepare themselves in times of peace and in times of war to help both sides. Moynier, already interested in relief work, took up the idea and in 1863 the first Geneva conference was held with 17 delegates from 14 European States; on Oct. 26, 1863, they adopted the Red Cross on a white field as the international banner of charity.

Moynier was president of the International Society of the Red Cross until his death. The first Geneva Convention of 1864 neutralized the medical services and the sick and wounded but not until 1906 was the voluntary association recognized.

The value of the Red Cross was first shown in the Prussian War of 1866.

Dunant lived poor and forgotten for thirty years, but in 1897 he began to receive recognition as the founder of the Red Cross and originator of the Geneva Convention and in 1901 received the first Nobel prize.

Moynier lived, well known and honored, as President of the International Committee of the Geneva Convention. In 1865 he received a prize for his book "War and Charity."

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Both names are indelibly written in the memorial tablets of the history of human civilization. Dunant first conceived the idea of neutral voluntary aid in war and Moynier translated the idea into practice and called into life the greatest humanitarian work of all time—the Geneva Convention. H. J. NICHOLS.

GREAT BRITAIN

Journal Royal Army Medical Corps.

January, 1911.

29 Table Jellies. By Major W. W. O. Beveridge, D. S. O., R. A. M. C.
32 An Inquiry into a Small Epidemic of Para-Typhoid Fever in a Camp in India. By Major H. W. Grattan and Major D. Harvey, V. H. S., R. A. M. C.
31 Medical History of the South African War (continued). By Lieutenant Colonel R. J. S. Simpson, C. M. G., R. A. M. C.
32 Incineration of Human Excreta: Further Observations. By Lieutenant Colonel Bruce Skinner, M. V. O., R. A. M. C.
33 Malaria at Nasirabad. By Lieutenant Colonel J. S. Green, R. A. M. C.
34 *Malingering. By Major C. E. Pollock, R. A. M. C.
35 Notes on Guinea-worm in the Sudan. By Major S. L. Cummins, R. A. M. C.
36 Four Years' Surgery in Gibraltar. By Major H. V. Prynne, R. A. M. C.
37 Landry's Paralysis and Malta Fever. By Surgeon-Major R. Samut, 1st K. O. M. R. of Militia.
38 Reaction of Sera of Anomalous and other Fever Cases to Bacillus Coli. By Major F. Smith, R. A. M. C.
39 Some Episodes in the Line of James Goodall Elkington, an Army Surgeon in the Peninsular Days, together with Extracts from his Journal. By Lieutenant Colonel H. P. Elkington, R. A. M. C.

34. **Malingering.**—Major Pollock states that the malingerer both in civil and military life affords the medical man a most interesting and at times annoying study. If a medical officer is successfully humbugged by a malingerer he not only loses in reputation and respect, but will find his work greatly increased by the advent of a host of imitators. Every effort should be used to detect malingerers, but medical officers and especially junior officers must never decide that any man is malingering till they have exhausted every scientific method of investigation. If there is any doubt as to the genuineness of the man's illness, let him have the benefit of the doubt.

Motives for Malingering.—(1) To evade unpleasant duty.

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(2 In order to get admitted into hospital and have an easy time; this applies especially to men undergoing detention.

(3) Home sickness. Soldiers abroad are sometimes attacked by a longing to get home and will do anything to attain their object.

(4) To get out of the Service.

(5) In order to obtain compensation for some injury by exaggerating its effects.

Conditions Dependent on the Man's Own Will—Mental Disease. The most important and at the same time most troublesome condition which any soldier may elect to simulate is undoubtedly mental disease in any of its forms. What is really wanted in India is a central establishment properly fitted up for treatment of mental cases and placed under the charge of a specialist in mental disease assisted by a trained staff.

Fits.—Another great source of trouble to the medical officer is frequent fits. They always select the time when the least experiencd orderly is on duty to sham a fit and never hurt themselves. The men who suffer from alcoholic-hysterical-pseudo-epileptic fits can hardly be called malingerers.

Hearing.—Complete deafness is not a favorite disease among malingerers, probably because when thoroughly carried out it makes the man's life in hospital somewhat dull, as he cannot converse freely with his fellow patients.

Vision.—Feigned defects of vision are always most troublesome to detect. The Italians have a test which consists of an oblong box in which are concealed two crossed tubes so that the right eye can only see what appears to be placed before the left and vice versa. Very excellent when defective vision is simulated in one eye.

Taste.—Defective taste never complained of as it would not lead to any privileges.

Speech.—Dumbness, or a high degree of hoarseness is occasionally simulated. In such cases can sometimes restore the lost power of speech by a sudden pick of a pin, galvanic current, or by a dash of cold water.

Fever.—By vigorously rubbing the bulb of a thermometer on a blanket or other rough surface a high temperature can undoubtedly be registered. If hot water is held in the mouth for a few minutes and the mouth kept shut until the thermometer is received, a high temperature will be registered.

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Pain.—Obscure pain in limbs and joints very difficult to eliminate.

Hemoptysis.—May be simulated by making a minute laceration in the mucous membrane of the mouth.

Jaundice.—A typical jaundice which lasts for one or two weeks may be caused by taking one or two capsules of picric acid, 5 grs. to capsule. Jaundice appears in from six to twelve hours.

Spurious Dislocation.—Some men are what is popularly called double jointed and can produce genuine sub-laxation of one of their joints whenever they please.

Palpitation.—Chewing tobacco in the early morning and swallowing the saliva is thought to be one of the ways by which this condition can be produced.

Several other conditions that may be simulated are mentioned, and the author closes with the admonition to the junior officers not to hastily conclude that a man is malingering because his symptoms do not fit in with their preconceived notions, but to thoroughly examine every case before making up their minds.

A. G. LOVE.

ITALY

Annali di Medicina Navale e Coloniale.

December, 1910.

40 *Accidents of Industrial Electricity and their Effects upon the Organism, Especially upon the Visual Organs. By A. Pastega.

41 *An Epidemic of Fever on Board of the "R. N. Elba" in a Tropical Climate. By N. Rana.

42 *A Note on Refrigerated Meat and Refrigeration on Steamships. By T. Gatti.

40. **Electricity Accidents.**—Pastega finishes the fourth and last part of his exhaustive and valuable paper on injuries to the visual organs due to electricity used industrially. The paper is of decided interest to naval medical officers, and a long bibliography, [in which, however, we note very few English titles,] testifies to the importance which foreign oculists have attributed to the subject.

41. **Epidemic of Fever.**—Rana describes in detail an epidemic of a continued fever of not very severe type which prevailed on the Italian warship "Elba" during her voyage in the Red Sea and Indian Ocean. The disease was attended with torpid liver and

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gastro-intestinal disturbances and lasted about one week. Malarial infection, of which there were many cases, was excluded by the absence in these particular cases of parasites, and the fact that this "gastro-intestinal fever" ran a typical course uninfluenced by quinine. A case or so of typhoid fever appeared on board, but these were differentiated clinically from the disease in question.

The author concludes that the condition was an auto-intoxication perhaps not differing in kind from many cases of indefinite nature observed in colder climates, but affecting such a large number on account of the depressing climate, unsuitable food for such a climate, the sedentary life in port, etc.

42. **Refrigerated Meat.**—The author dwells on the importance of having meat of perfect condition before refrigerating, well butchered and drained of blood. Refrigeration is entirely satisfactory in such a case, but is not capable of preventing the further deterioration of meat in which putrefactive changes have already begun. W. D. McCaw.

Giornale di Medicina Militare.

December, 1910.

43 *Statistical Account of Surgical Operations in Military Hospitals During the Year 1909.
44 *Iodine in Surgical Antisepsis. By Filippo Carta.
45 Luigi Scarano. Obituary.
46 Angelo Mosso. Obituary.

43. **Surgical Operations.**—During the year 1909 there were 2,533 surgical operations with 35 deaths in the Italian Military Hospitals. The list includes, however, 29 (bloodless) reductions of fractures and 11 dislocations, as well as a great number of distinctly minor operations. In cranial surgery there were 1 trephining of the frontal sinus, 34 mastoid operations with 3 deaths, and 1 extensive resection of the skull for injury with extradural clot and compression. Death resulted from paralysis of the vagus nerve. In the thorax there was no operation of great magnitude; 28 aspirations, 10 intercostal and 17 retrocostal thoracotomies. Twenty-five laparotomies are noted, of which 3 were for trauma, 8 for appendicitis, 7 for tuberculosis peritonitis, and 3 for hepatic abscess. Total number of hernia operations was 401, of which 368 were unilateral inguinal hernia. Varicocele operated upon by various methods numbered 472.

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44. Iodine.—Carta recommends the "Grossich" method of sterilizing the field of operation. He prepares the patient if possible 24 hours in advance by a dry shave and a good scrubbing of the parts; ten minutes before the operation he cleans the skin with iodinized benzine (1 to 1,000) then paints with iodine tincture. A second painting is done immediately before operation. The benzine solution is used for its cleansing effect upon the fatty matter of the skin. The author has used this method in hernias, in laparotomies and many other conditons. W. D. McCaw.

SPAIN

Revista de Sanidad Militar.

January, 1911.

47 *The Medico-military Exhibition at the Tuberculosis Congress of Barcelona.
48 Technic of Administration of "606" at the Military Hospital of Carabanchel.
49 Acute Bronchitis of Intestinal Origin with Pseudo-meningitic Symptoms. By Jose Valdes Lambea.
50 The Future Military Hospital of Valladolid. By M. Andreu.

47. Barcelona Exhibition.—A list of the articles exhibited by the Spanish Medical Department at the Barcelona Congress is gievn and the conclusions and recommendations of the Congress for preventing tuberculosis in the army are announced, in brief, as follows:

Making military service obligatory. Modification of the recruiting laws so as not to admit undersized men or weaklings. Authorizing medical and veterinary officers to instruct the Army in sanitary matters. Establishment of amusement rooms, etc., at garrisons. Special pavilions for the treatment of tuberculosis patients at military stations. Three convalescent hospitals in the three zones of the Peninsula (mountain, coast and intermediate regions). A general tuberculosis sanitarium for the cure of officers and enlisted men. A corps of professional cooks for the Army. The establishment of suitable and economical butcher and milk shops at the larger garrisons. Modification of the uniform so as not to restrain the respiratory movements of the body. Establishment of better lavatories and laundries, disinfecting plants for clothing, etc. The creation of a body of military dentists and the enforcement of the use of the tooth brush by the soldiers. W. D. McCaw.

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Reviews.

PRIMER OF HYGIENE. By John W. Ritchie, Professor of Biology, College of William and Mary, Virginia, and Joseph S. Caldwell, Professor of Biology, George Peabody College for Teachers, Tennessee. Illustrated by Karl Hassmann and Hermann Heyer. Octavo of 184 pages. World Book Company, 1910, Yonkers-on-Hudson, New York.

This small book is intended for the instruction of the fourth and fifth grade pupil in personal hygiene. The importance of knowledge of hygiene to the individual appeals with more force to army medical officers than to any other class of physicians as in war the safeguards provided by the community cease to operate and each soldier becomes dependent on himself for his own good health. This is never true to an equal extent in civil life but it would almost seem an obligation of the state to teach each child how to prevent disease in his own person for circumstances occur in the life of all wherein this is the only safety.

The present book should prove an excellent text-book for the use of children. The chapters on hygiene are much superior to one on accidents. Nor is it believed that this, or the chapter following it on simple exercises for use in schools, properly have a place in a book of this character.

PRINCIPLES OF PUBLIC HEALTH. A Simple Text-book on Hygiene, Presenting the Principles Fundamental to the Conservation of Individual and Community Health. By Thos. D. Tuttle, B. S., M. D. Secretary and Executive Officer of the State Board of Health of Montana. Octavo of 186 pages. World Book Company, 1910, Yonkers-on-Hudson, New York.

The title of this small book is rather larger than the contents warrant. In reality the author has written a manual on personal hygiene for the use of children and a very good one. As has been stated often in these pages we are thoroughly in sympathy with all efforts directed toward teaching the child how to preserve good health. We must take issue with the author on the subject of the first-aid treatment of wounds, which most distinctly is not washing with soap and water, which he advocates. Nor do we like putting advice to the teacher in a book which will be read by

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pupils, more especially when such advice is much better for the latter not to have, as is the case in the present instance.

With these exceptions the manual merits high commendation.

A TEXT-BOOK OF GENERAL BACTERIOLOGY. Second Revised Edition. By Edwin O. Jordan, Ph. D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. Octavo of 594 pages, illustrated. Cloth, $3.00 net. W. B. Saunders Company, 1910. Philadelphia and London.

This is an excellent book and may be taken as a safe guide to bacteriology for the specialist as well as for the general practitioner. The author's style is clear and concise and his present book is kept within practical limits as to bulk while at the same time all subjects are adequately treated.

THE PRACTICAL MEDICINE SERIES. Comprising ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Gustavus P. Head, M. D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School, and Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School.

Volume VIII. Materia Medica and Therapeutics. Preventive Medicine Climatology. Edited by George F. Butler, Ph. G., M. D., Henry B. Favill, A. B., M. D., Norman Bridge, A. M., M. D. Series 1910. Octavo of 380 pages. Price $1.50. Price of seven in ten volumes, $10.00. The Year Book Publishers, 40 Dearborn Street, Chicago, Ill.

The present volume gives an excellent review of materia medica and therapeutics for the year. The section on preventive medicine by Dr. Favill, though it has little military application, will be read with special interest by members of the association who, of course, keep up with everything having to do with diminishing disease whether in military or civil life.

Volume IX. SKIN AND VENEREAL DISEASES. Miscellaneous Topics. Edited by W. L. Baum, M. D., Harold N. Moyer, M. D. Series 1909. Octavo of 245 pages. Price $1.25.

The miscellaneous topics include nothing of special interest to members. An excellent summary appears of the work done with "606" up to the time of going to press. The excellent article on this subject by Captain H. J. Nichols, Medical Corps, U. S. A., and Dr. John A. Fordyce, which appeared in the Journal of the American Medical Association, October 1, 1910, is quoted freely.

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Volume X. NERVOUS AND MENTAL DISEASES. Edited by Hugh T. Patrick, M. D., Professor of Neurology in the Chicago Policlinic, Clinical Professor of Nervous Diseases in the Northwestern University Medical School; Ex-President Chicago Neurological Society. Peter Bassoe, M. D., Assistant Professor of Nervous and Mental Diseases. Rush Medical College. Series 1910. Octavo of 248 pages. Price $1.25.

The reputation of the authors of this volume insures an excellent review of the subject of which it treats.

PRACTICAL BACTERIOLOGY, BLOOD WORK AND ANIMAL PARASITOLOGY: Including Bacteriological Keys, Zoological Tables and Explanatory Clinical Notes. By E. R. Stitt, A. B., Ph. G., M. D. Surgeon, U. S. Navy; Graduate, London School of Tropical Medicine; Associate Professor of Medical Zoology, Philippine Medical School; Formerly Instructor in Bacteriology and Tropical Medicine, U. S. Naval School, etc. Second Edition, Revised and Enlarged with 91 Illustrations. Octavo of 345 pages. Price $1.50 net. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia.

The author has succeeded in this small book in putting in handy form data of importance to all laboratory men. The fact that a second edition has followed the first in less than a year shows clearly that there is room for a manual of this character and that Dr. Stitt's fellow workers appreciate his efforts on their behalf.

THE TREATMENT OF DISEASE. A Manual of Practical Medicine. By Reynold Webb Wilcox, M. A., M. D., LL.D., Professor of Medicine (Retired) at the New York Post-Graduate Medical School and Hospital; Consulting Physician to St. Mark's and to the Nassau Hospital; Formerly President of the American Therapeutic Society, etc. Third Edition. Thoroughly Revised and Enlarged. Octavo of 1023 pages. Price $7.50 net. P. Blakiston's Son & Co., 1012 Walnut Street Philadelphia, 1911.

This exhaustive work now appears in its third edition. Why it is not called a practice of medicine instead of being entitled "The Treatment of Disease" is not apparent. The author has, it is true, devoted a great deal of space to treatment; but every other subject which is usually incorporated in books on the practice of medicine are also included here.

Aside from this peculiarity the book deserves commendation. The author has had large experience in teaching and the sections on treatment are exceptionally full and comprehensive.

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Index to Current Literature.*

ORGANIZATION AND ADMINISTRATION.

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RUBIANO. (S.) [The prevention of typhoid fever in the army.] *Siglo méd.*, Madrid, 1910, lvii, 691-693.

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ERMAKOW. [Alcoholic psychoses in the Russian army of Manchuria.] *Caduceé*, Par., 1910, x, 299.

*Supplied through the courtesy of the officer in charge of the Surgeon General's Library.

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Editorial.

THE recently published statistics of the British Army for the year 1909 which appear in the "Report of the Health of the Army" for that year bring again to our attention the advantages to be expected from good sanitation not only from the military and medical standpoint but also from that of the taxpayer. The Lancet, the United Service Gazette and other British medical and military journals naturally have commented at some length on the improved showing of the British Army in respect to health and the results of their study of the statistics in question are freely quoted here.

The proportionate numbers admitted to hospital and of constantly sick in hospital are about one-half what they were for the ten year average 1889-1898. Deaths are less than one-half and discharges for disability rather more than one-half.

This improvement has been taking place year by year since the South African War in 1901, and though a limit must ultimately be reached, further improvements in barracks and quarters and advances in knowledge of sanitation may result in an even more favorable showing in the future. Two thousand, two hundred beds in military stations at home hospitals have been closed as no longer required; while in the colonies the reduction has amounted to nine hundred and one beds. In 1909 there were 570 less invalids sent home than in the previous year though the strength was approximately 5,000 more, and 2,741 less than in 1904. It is also desirable to note that improvement was manifested in almost all the important preventable diseases which affect the military service. Typhoid fever gave an admission rate of 3.8 as compared with 7.2 per 1,000 for the previous fifteen year period. Malta fever has practically disappeared. Admissions from venereal affections have fallen from 105 per 1,000 to 73.4. Malarial fevers have on the contrary increased from 64.1 per 1,000 the average for ten years to 75.3 per 1,000.

The true measure of the effectiveness of an army from the standpoint of health is of course the showing made under field

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service conditions. This was also excellent in Great Britain in 1909 when no outbreak of typhoid fever occurred at either the large camps at the Curragh or on Salisbury Plain. 80,000 men were under canvas at the latter point. In a territorial camp of 14,000 men at Caerwys in Flintshire the water supply had been condemned and all water was sterilized by a heat exchange apparatus with complete success.

Without taking time to make comparisons it may be stated at once that other nations, including our own, have like improvements to show in respect to morbidity, mortality and discharge rates in their armies. Opinions differ however as to what we may expect in future wars. The more optimistic in view of the fine peace showing believe that all armies will be almost free from disease in war. Unfortunately they do not take all the facts into account. There is every reason to believe that in the light of our present knowledge armies well prepared and trained in peace will escape disease in war to an extent that was not deemed possible so many years ago. If the contrary is the case and the army which is mobilized to meet the enemy in whole or in part has not had the benefit of preparation and training in sanitation in peace, conditions at first or until such training is acquired are not likely to be very much better than they have been in the past. In a word sanitary training and preparation in peace are essential to any army which expects to meet the enemy on an equal fo ting in war.

After a careful study of the possibilities a new department has been created beginning with this number of the journal. In this department an attempt will be made to abstract all the more important papers which appear in the foreign journals which deal with subjects of special interest to the military and naval medical officer. Several of our medical journals pursue a similar plan in respect to professional periodical literature and it has seemed almost essential that our readers should be equally well provided for in regard to the periodical literature of more special interest to them.

The thanks of the association are due to the medical officers who have undertaken the task of making the necessary abstracts. This represents a sacrifice of time on their part which should be justly appreciated by their fellow members.

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News of the Services.

Major William J. L. Lyster, Medical Corps, who has been doing some special work on public health, in Philadelphia, has been assigned to duty as attending surgeon in that city, until June 1st, to enable him to complete his work.

Captain Park Howell, Medical Corps, was honorably discharged from the service of the United States on January 20, 1911.

By recent orders the following-named officers sail from Manila, P. I., for San Francisco, California, on the July 15th transport: Major William H. Wilson, Medical Corps; Major William F. Lewis, Medical Corps; Captain Louis C. Duncan, Medical Corps; 1st Lieutenant Isaac W. Brewer, Medical Reserve Corps; 1st Lieutenant Herbert H. Smith, Medical Reserve Corps.

The following named officers are relieved from duty in the Philippine Islands, on August 15th, and directed to proceed to San Francisco, California: Major Thomas J. Kirkpatrick, Medical Corps; Captain Jacob M. Coffin, Medical Corps; Lieutenant Arnold D. Tuttle, Medical Corps.

Orders have been issued directing Major George D. Deshon, Medical Corps, to report to an examining board in Washington, D. C., on April 3rd, to determine his fitness for promotion. Major Deshon sails for the Philippines June 5th.

Two officers of the Medical Corps, Majors F. P. Reynolds and Alexander N. Stark, have been on court-martial duty at Madison Barracks, New York.

Lieutenant Colonel Charles Willcox, Medical Corps, has reported for duty at Fort Sheridan, Illinois.

Lieutenant Colonel Frank R. Keefer, Medical Corps, has been under observation and treatment at the Army and Navy General Hospital, Hot Springs, Arkansas.

Captain George H. Scott, Medical Corps, is on a two months' leave of absence which he is spending at Butler, Penn., with his parents. At the expiration of this leave Captain Scott reports at the Army and Navy General Hospital, Fort Bayard, New Mexico, for duty.

Major Frederick A. Dale, Medical Corps, has reported at his new station, Fort Crook, Nebraska, for duty.

Captain Guy V. Rukke, Medical Corps, has reported at Jefferson Barracks, Missouri, for duty.

By recent orders Captain William A. Duncan, Medical Corps, is assigned to duty at the Field Medical Supply Depot, Washington, D. C.

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1st Lieutenant John W. Sherwood, Medical Reserve Corps, is on a two months' leave of absence which he is spending in preparing himself to take the preliminary examination for the Medical Corps of the Army.

Captain Henry F. Pipes, Medical Corps, has been granted a leave of absence to take effect about June 1st. At the expiration of this leave Captain Pipes will be assigned to duty in the Philippine Islands.

Dental Surgeon Harold O. Scott, who has been ordered home for annulment of contract, has made request to remain in the service. He will sail for the Philippines April 5th.

Captain James I. Mabee, Medical Corps, has reported for duty at Fort Huachuca, Arizona.

1st Lieutenant George B. Foster, Jr., Medical Corps, who has been doing special work at the Army Medical School, has been relieved from duty and assigned to Fort Leavenworth, Kansas.

In the preliminary examination for the Medical Corps of the Army, the following applicants received the favorable recommendation of the examining board: Dr. Omar H. Quade, St. Louis, Missouri; Dr. Guy L. Qualls, St. Louis, Missouri; Dr. Philip B. Connolly, New York City, N. Y.; Dr. Leopold Mitchell, New Orleans, Louisiana.

1st Lieutenant Robert Skelton, Medical Reserve Corps, who has passed the preliminary examination for the Medical Corps, has been called into active service and assigned to duty at Fort Adams, Rhode Island.

Captain C. J. Bartlett, Medical Corps, is spending his leave of absence in Wales, Europe.

At the mid-winter examination at the Army Medical School, nine student officers failed to receive the minimum mark required, and upon the recommendation of the faculty have been ordered to their home for recall from active service: 1st Lieut. F. M. Blair, Medical Reserve Corps; 1st Lieut. G. C. Dolley, Medical Reserve Corps; 1st Lieut. E. C. Lynch, Medical Reserve Corps; 1st Lieut. W. F. McLaughlin, Medical Reserve Corps; 1st Lieut. A. L. Pulver, Medical Reserve Corps; 1st Lieut. C. A. Scherer, Medical Reserve Corps; 1st Lieut. G. B. Underwood, Medical Reserve Corps; 1st Lieut. H. B. Williams, Medical Reserve Corps; 1st Lieut. J. H. Wilson, Medical Reserve Corps.

1st Lieutenant William H. Thearle, Medical Corps, is on temporary duty at Jefferson Barracks, Missouri.

1st Lieutenant James D. Kerr, Medical Reserve Corps, tendered his resignation as an officer of the Army, which was accepted on February 7th.

1st Lieutenant Arthur C. Delacroix, Medical Reserve Corps, has been relieved from duty at Boise Barracks, and assigned to duty at Fort Columbia, Washington.

Captain William H. Moncrief, Medical Corps, a recent arrival from the Philippine Islands, has been assigned to duty at Fort Leavenworth, Kans.

Owing to the trouble on the border quite a few medical officers of the Army have been assigned to duty with troops doing scout duty in Arizona, New Mexico and Texas.

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A Bill for the reorganization of the Dental Corps was attached to the Army Appropriation Bill on the floor of the Senate. This Bill calls for a Corps consisting of not to exceed one dentist for every thousand men in the Army. All officers are required to come into the Corps at the grade of 1st lieutenant; they attain their Captaincy at the end of five years' service, and their Majority at the end of ten years' service. It is believed this Bill will be materially changed in conference, but it is hoped that some Bill reorganizing the Dental Corps and putting it on a commission basis will be passed.

The following-named officers have applied for membership in the Association of Military Surgeons since November 4th, 1910:

First Lieutenant H. A. Phillips, U. S. Army.
First Lieutenant C. D. Cowles, Jr., U. S. Army.
Assistant Surgeon Howard Foster Lawrence, U. S. Navy.
First Lieutenant Joseph O. Walkup, Medical Reserve Corps.
First Lieutenant Thomas Wilbur Bath, Medical Reserve Corps.
First Lieutenant Armistead K. Tayloe, N. G. North Carolina.
First Lieutenant J. Wilson Shiels, Medical Reserve Corps.
First Lieutenant Robert E. Sievers, Medical Reserve Corps.
First Lieutenant Angus McLean, Medical Reserve Corps.
First Lieutenant Sanger Brown, Medical Reserve Corps.
First Lieutenant Morris D. Hartman, N. G. Tennessee.
First Lieutenant Alfred C. Smith, N. G. Massachusetts.
First Lieutenant Henry R. Storrs, Medical Reserve Corps.
First Lieutenant Henry C. Bierbower, Medical Reserve Corps.
First Lieutenant Charles A. Speissegger, Medical Reserve Corps.
First Lieutenant Albion McDowell Coffey, Medical Reserve Corps.
First Lieutenant Frederick Thomas Harris, Medical Reserve Corps.
First Lieutenant Roy Cleveland Heflebower, Medical Reserve Corps.
First Lieutenant Henry A. Ingalls, Medical Reserve Corps.
First Lieutenant William L. Sheep, U. S. Army.
First Lieutenant Joseph Lewi Donhauser, Medical Reserve Corps.
First Lieutenant William Campbell Posey, Medical Reserve Corps.
First Lieutenant Arthur D. Bevan, Medical Reserve Corps.
First Lieutenant Philip F. O'Hanlon, Medical Reserve Corps.
Captain F. W. Weed, U. S. Army.
First Lieutenant Frank LeM. Hupp, Medical Reserve Corps.
First Lieutenant Reynold Webb Wilcox, Medical Reserve Corps.
First Lieutenant John H. Gibbon, Medical Reserve Corps.
First Lieutenant Farrar Cobb, Medical Reserve Corps.
First Lieutenant Henry R. Weston, Medical Reserve Corps.
Captain James F. Hall, U. S. Army.
First Lieutenant Curtis Bland, Medical Reserve Corps.
First Lieutenant Thomas C. Walker, Medical Reserve Corps.
First Lieutenant William M. L. Coplin, Medical Reserve Corps.
Captain Harry G. Humphreys, U. S. Army.
First Lieutenant George E. de Schweinitz, Medical Reserve Corps.
First Lieutenant Paul E. Archinard, Medical Reserve Corps.
Major Paul S. Halloran, U. S. Army.

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The following is a courteous telegram received from our sister association in Canada:

"Ottawa, Ont., February 23, 1911.

"Surgeon General Torney, War Department, Washington, D. C.

"Meeting of Canadian Association of Military Surgeons most successful. Glad to have Major Seaman with us as your first representative. He has cemented a greater fellowship between the two associations. We congratulate you on your selection and hope that you will always send a representative. George S. Rennie, President.

"4:46 a. m., Feb. 24."

It is learned from the Division of Militia Affairs that a camp of instruction for medical officers and hospital corps men of the organized militia of the United States is contemplated at Fort Benjamin Harrison in July.

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VOL. XXVIII, No. 4 APRIL, 1911

The Military Surgeon

Original Articles.

AUTHORS ALONE ARE RESPONSIBLE FOR THE OPINIONS EXPRESSED IN THEIR CONTRIBUTIONS.

THE TRAINING OF SANITARY TROOPS.*

By Major Paul F. Straub, Medical Corps (General Staff), U. S. Army.

IN the report of the Inspector General of the Army for 1910 it is stated "from observations, both in campaign and field work and in the inspection of posts, that the medical field training is not up to the standard and that more attention should be given to the duties of the Medical Corps in campaign work, as preparedness for war is of the first importance."

It must be admitted that the present status of the Medical Corps, as regards field training, is far from satisfactory and has long been a matter of grave concern to the Surgeon General's Office. The reason that more active steps have not been taken to remedy the defects is due to the fact that it has not been deemed expedient to divert the energies of the limited number of officers in the service to a preparation for some future emergency as long as the daily emergencies that arise in posts in connection with the care of sick soldiers and their families demand their entire time and attention.

*Read by title at the 19th Annual Meeting.

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The situation in respect to lack of numbers is now rapidly improving and as soon as the present authorized allowance of medical officers is in service, more effective measures can be instituted to remedy the defects of which the Inspector General complains.

The establishment of Medical Department Camps of instruction last year, the increased efforts at training sanitary personnel at the recent maneuver camps, the opening of a correspondence school for medical officers at Fort Leavenworth, and finally the special course of instruction to be given selected medical officers at Fort Leavenworth next spring, all indicate that our progressive Surgeon General is fully alive to the needs of his department He has assured a high standard of professional efficiency in his corps by the stringent system of examination that has recently been adopted and every one who has closely observed the workings of the law under which the Medical Department is now operating, is convinced that the Surgeon General is thoroughly in earnest in the endeavor to maintain a corps of efficient medical practitioners and that every medical officer who desires to continue in the service must give his most earnest attention to the study and practice of his profession. The fact that some few of us have been compelled to temporarily sacrifice our professional aspirations upon the alter of official necessity is not to be taken as evidence to the contrary.

Carping critics might pretend to see, in this new activity, a tendency of the Medical Department to stray from its primary functions, sanitation and care of sick and wounded, but a little reflection will convince any thoughtful person that such studies and training will facilitate immensely that very purpose in active service.

The criticism of the Inspector General applies, perhaps, with the same or even greater force to the medical service of the National Guard. Very few states have made any provision for the training of sanitary personnel except in some of the duties of the regimental detachments, and very little effort has been put forth in preparation for a more extended service. That the regimental service is utterly inadequate has been demonstrated, at an enormous cost, in all of our larger campaigns, and the medical departments of the various States must prepare for a more extended service if they want to make efficient preparation for war.

A great problem which confronts the Medical Department, is the development of a system of administration and training of

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sanitary organizations that will stand the stress and strain of active service, a system that does not leave their efficiency largely dependant upon the guidance of the inspiration of the moment, but upon the intelligent and well considered efforts of the whole organization and upon the habit of co-ordination. The time has passed when we dare place our reliance upon inspiration of the moment as it is only by timely and carefully planned preparation that we can hope to render the service required of us.

Proficiency in garrison routine alone can no longer be accepted as a qualification for active service, and the requirements of war must be made the standard of efficiency; nor can the experience gained by service with small commands in Indian warfare be considered as a reliable guide for conducting operations on a large scale.

In the absence of opportunity to learn our lesson in the rough school of war we must content ourselves with a theoretical study of the subjects involved and such practical training as is afforded by the summer field exercises. By theoretical studies we hope to profit by the recorded experience of our predecessors who learned their lessons in the field in great campaigns, and to acquire sufficient knowledge of certain collateral military branches that are necessary for field service. That sanitary troops can be properly trained for war in time of peace was abundantly demonstrated by the Japanese in the Manchurian campaign.

It can not reasonably be expected that the Medical Department can make adequate preparation for war, under present conditions, with the limited personnel allowed by law and regulations and without permanently organized sanitary field units.

It might be argued that the organized militia and volunteers may be expected, in case of war, to furnish all that is required in the way of trained personnel and organizations to assure an efficient sanitary service, but if past experience may be taken as a guide, such expectation can only lead to disaster. That we can not place our reliance upon a hastily organized sanitary service has been demonstrated in every war in which we have engaged and it is evident some better system must be adopted if we hope to prevent a repetition of the calamities of the Civil and Spanish Wars.

Formerly medical officers were trained at the expense of the sick and wounded and loss in effective strength of our Army.

We must decline to accept a medical degree and experience in

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ordinary practice of medicine as evidence of qualification to formulate sanitary plans and conduct extensive operations in time of war, nor can we consider that ordinary post routine affords regular medical officers the opportunity to qualify for such duties.

In order that the new system of training recently inaugurated by the Surgeon General may bring about the desired result, it is urgently necessary that at least the sanitary formations that accompany troops in the field shall be organized and maintained in time of peace, not only to provide for emergencies but to develop a system of administration and training that will serve as a model in case a large army is mobilized for war.

The Surgeon General has long had this in mind and has taken the necessary steps to bring it about, and it is hoped that a beginning will be made in the near future. The provisional organizations that have been assembled from time to time for service at maneuvers and for other purposes have largely failed in their object as insufficient time was given to even perfect a practical organization.

The Medical Department does not deem it expedient at this time, however, to demand the authority and personnel to organize all the sanitary units that would be required should the entire mobile Regular Army be mobilized for war, but it is urged that at least six ambulance companies and six field hospitals be added to the permanent establishment. These institutions are to replace the present Hospital Corps companies of instruction and serve as schools for the Hospital Corps recruits. These units are to be distributed among the various military departments and stationed at the large posts where quarters may be found for the personnel and stables, etc. for the full amount of transportation. No good purpose can be accomplished unless such units are completely equipped with regulation supplies and transportation, but it is perhaps, unnecessary that a full personnel should be allowed in time of peace. It is thought that two medical officers, all the non-commissioned officers, and two-thirds of the privates first class and privates for each unit will be enough to assure an effective organization.

In course of time when all the troops, both regulars and national guard, are organized in divisions and field armies, it is expected that all the mobile sanitary units will be provided, and the militia will be expected to furnish their proper proportion.

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A large increase will have to be made in the medical and hospital corps of both the regular establishment and in the militia before this can finally be accomplished. At the present time the regular army has not much more than 40% of the sanitary personnel that will be required to serve it in war.

We are all quite convinced that it requires as much time and training to make an efficient ambulance company or field hospital as for any other of the smaller units of the military establishment and an opportunity must be given medical officers to get the necessary experience before the great emergency arises. If we wait until war is declared we invite disaster and the troops we are expected to serve will pay the penalty.

Even after the mobile units have been provided there is still much left to be done, and at any time we may be called upon to provide the institutions that are to serve in rear of the army on the lines of communication and at home.

The sanitary service on the lines of communication is of infinitely greater importance, from a strictly professional point of view, than that of the front, as sooner or later all the more severe cases of sickness or injury are brought there for temporary or permanent care and treatment. The function of the sanitary institutions located on the lines of communication and at home is not exclusively humanitarian as they must also conserve the interests of the army at the front and must be conducted upon strictly military lines, otherwise a condition might arise such as General Banks complained of in the Civil War when he stated that nearly his whole army was stolen away by the sanitary department.

The time is coming when our military authorities will see the necessity of making some provision for the sanitary service of the rear beyond simply providing materiél for some of the institutions.

Up to the present time the Medical Department has not been able to do anything toward the actual organization of any of these institutions, except general hospitals, but materiél for a number of base and stationary hospitals is in store in our supply depots. Every other military nation not only has the materiél necessary for all such institutions that they will need in war but the personnel therefore is designated and trained.

The militia is as much concerned in this matter as the regular army. The difficulties that we encounter in the endeavor to provide sanitary units for our own troops should make it quite clear

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to them that they must not expect too much of us in the way of making provision for their sick and wounded and that they must contribute their share to building up an adequate sanitary organization.

Much remains to be accomplished to prepare medical officers for the duties that will be required of them in war, although proper steps have been taken to awaken an interest in the collateral military branches that are necessary to their efficiency in the field. The training at our special camps of instruction and at maneuvers, and the incorporation of a medico-military problem in promotion examinations are all results of the new policy to make the requirements of war the standard of efficiency. We fully realize that the most important function of the medical department in the field as well as in garrison, is the prevention of disease, and ample provision has already been made for the training of the medical officers in the duties connected therewith and about the only thing that seems to be necessary to complete this training is an opportunity for more of us to gain some experience in some of the more extensive sanitary operations. That the present system is efficient is shown by the great results obtained by members of our corps in Cuba, Panama, the Philippines and some of the maneuver camps. It is not too much to say that the building of the Panama Canal and the military occupation of Cuba were only made practical by the effective sanitary administration by medical officers of the Army.

The present system of training in the purely professional parts of our duties may be considered as satisfactory, but the training in sanitary tactics still leaves much to be desired. The necessity of thorough training therein is well set forth in a recent official British manual which states that: "It is necessary, however, to remember that while these (prevention of disease and care and treatment of sick and wounded) are the objects for which he is maintained, the interests of the Army require something more than professional scientific knowledge from an officer of the Royal Army Medical Corps, because it is impossible for him to carry out his duties efficiently without a certain knowledge of military science, especially as regards the administration of an army in the field. As regards actual tactics, while officers of the Royal Army Medical Corps are not charged with combatant duties, they are very intimately concerned in the combatant work of other branches, and the efficient performance of their duties

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on the battle-field demands some knowledge of the general principles on which military operations are conducted. They must be capable of understanding from an operation order what is likely to be required of them."

In other words the medical officer should have a clear understanding of the situation to which he is expected to adapt his plans for the care of the wounded.

It must be recognized that there is still some opposition in our Army to the idea that medical officers should give some time and attention to matters that are not purely professional and that we should not limit our activities to the ordinary duties of the family physician. In former times medical officers did limit themselves to their strictly professional duties, and the result of such a policy was anything but satisfactory in time of war, in fact it was largely responsible for the inefficiency of the medical service at the beginning of war. Reports indicate that their professional work was excellent in all of our campaigns but the whole service was characterized by lack of system and co-ordination that was directly responsible for the breakdown of the medical department in the earlier periods of every war.

To lay out a course of study that will best meet the requirements of the situation is a matter of no small difficulty. None of us has had any experience with larger commands organized on modern lines and we must look to the recorded experience of others acquired in the great campaigns. The schemes of instruction developed in other armies can not, however, be accepted without modification and one must be devised that is specially adapted to our peculiar institutions.

Elaborate courses of theoretical and practical instruction in the duties of sanitary troops in the field are given in all up-to-date armies, and it is a notable fact that in those which are considered to be the most efficient and progressive military establishments, the greatest amount of attention is given thereto.

In our army medical department but little has been done to prepare sanitary troops for the duties that arise in connection with the evacuation service—relieving a force of its encumbrance of sick and wounded—upon which the success of the sanitary service at the front largely depends. It is recognized that this service has an important bearing upon the mobility, effective strength and the morale of troops.

Adequate preparation for such service requires the considera-

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tion of topics that are purely military and there has been some opposition to including such studies in the course of instruction for medical officers, but the idea that such studies are essential to complete their education is gaining ground in our service The higher military authorities have given the Surgeon General every encouragement in his efforts to make provision for such training and opposition has been encountered from officers who have not given much attention to the larger military problems. Before entering upon the study of sanitary tactics, or use of sanitary units in the field, the student must necessarily make himself familiar with the Manual of the Medical Department. selected chapters of Army Regulations, Field Service Regulations, and the various manuals issued by other staff departments governing army organization and administration in general, all of which have an important bearing upon the sanitary service in campaign. Without such knowledge a medical officer in the field is entirely helpless, and not only will he be unable to properly perform his own duties but the lack of co-ordination that would result therefrom would compromise the efficiency of the entire sanitary service. The habit of co-ordination, so necessary to a successful service, is based upon a knowledge of the details of administration and organization and the systematic practical field training therein.

A study of the sanitary history of great campaigns is enlightening. While military science is constantly progressing and the improvements made in firearms have caused many changes to be made in both grand and minor tactics, all of which have reflected themselves upon the sanitary service, there are certain fundamental principles deduced from the experience in the great campaigns of the past, that may still be used as a safe guide for future operations, and the modifications made necessary by modern improvements in arms and tactics can easily be understood.

The additional military subjects to which the medical officer must give his earnest attention are:

Map reading and terrain,
Weapons,
Battle losses,
Orders,
Elements of tactics of the different arms.

Map reading is an ever present necessity for medical officers

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in the field, so they may find their way about and select sites for stations and evacuation routes.

Every operation order refers to maps and to insure an intelligent understanding thereof, the medical officer must be able to take advantage of the assistance that map reading affords. The use of a map to find ones way about is not difficult but it requires some practice, but its use in studying the configuration of ground in preparation for tactical proceedures is much more difficult and involves much more practice. The estimation of the efficiency of the cover afforded by hills and slopes is of much importance to medical officers in the solution of problems and in the field under circumstances that make an examination of the ground impracticable. In preparation of a reconnaissance of ground, a preliminary study of the map will help a great deal and may save many weary steps.

The range and efficiency of weapons and the manner in which they are used have an important influence upon the sanitary service as the disposition of sanitary units in battle depends very much upon the range, trajectory and penetration of projectiles. While we are not so much concerned by the enemy's aimed fire, as we do not propose to allow our stations to become targets, the arc of dispersion of overshots concerns us a great deal. We must also give some consideration to the effective range of firearms against bodies of troops of various sizes as we may be required to march our organizations over exposed ground. The subject of the range and effect of artillery projectiles of different classes is not to be omitted.

The efficiency of cover against enemy's fire is also to be determined from a knowledge of the range and trajectory, especially from the slope or fall of bullets fired at different ranges, in connection with the configuration of ground as shown by countour maps.

It may be remarked here that our idea of what constitutes good cover differs somewhat from that of many line officers, if the limited experience at our maneuvers is to be taken as an indication. A reverse slope might give excellent cover for a skirmish line and still be totally exposed, as far as our special service is concerned.

A study of battle losses is also to be made so as to give some idea of the amount of surgical work to be expected and furnish a basis for calculating the amount of supplies and transportation

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that may be required. It is interesting to note in this connection that the statistics of the Manchurian War, as far as published, indicate that the proportion of casualties sustained by the contestants was much the same as in some former great wars that took place before the modern small calibre, long range rifle was adopted. This rather unexpected result may be explained, perhaps, by the very reasonable supposition that the material of which soldiers are made is the same now as it was in former years, and that there is a limit to human endurance beyond which troops can not be forced. When this limit has been reached troops no longer retain their aggressiveness.

Every medical officer must be competent not only to properly interpret orders, but to issue them in proper form when necessary. This requires some experience and training, as loosely drawn or misinterpreted orders have been responsible for many difficulties and many disasters in military operations. Medical officers holding higher administrative positions, especially, must be prepared to formulate orders, or submit their recommendations in proper form to be included in field and other orders.

Many of the terms used in orders have a peculiar and special significance that can only be appreciated by those who have been trained therein and have a broad understanding of military methods and operations. One of the great difficulties in formulating orders, more especially those that emanate from higher officers, is in making them definite and exact and at the same time preserving some elasticity therein, so that some allowance is made for variable conditions and the fact that the minor authority who is concerned in their execution, may have a better knowledge of local conditions.

It seems reasonable to believe that a medical officer can not properly adapt his plan for the rescue and care of the wounded in battle, to a situation which he does not understand and that it is necessary that he should have a clear conception of the manner in which combatant troops, in which he is expected to serve, are handled in the field. No profound study of the military art is required. At least an elementary knowledge of infantry, cavalry tactics and battle formations are necessary to a clear understanding of the special military situation that may confront him.

The various types of engagements must be appreciated and the special conditions that present themselves in a rencounter, planned attack or defense must be considered in preparing for battle,

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as such knowledge will give some idea of the extent of ground to be covered in the collection of wounded and when and where the lines of assistance are to be established.

It is a very interesting and instructive study to trace the development of battle tactics and the corresponding sanitary service from the time when fairly efficient firearms were introduced into the military service. In the 18th century, owing to the poor quality and short range of the weapons then in use, battles were preferably fought on level plains, contestants approached within short distances of each other and engagements were concluded in a few hours at the most. Under modern conditions battles are liable to last for days and even weeks, each commander endeavors to take full advantage of the cover and protection afforded by terrain, and battles are begun and carried on at longer ranges. In former times the style of tactics in use precluded any help to the wounded while the battle raged, now it is demanded that surgical help shall be at hand at the beginning and during the entire course of the engagement.

Nor is the battle sanitary service of the present day organized solely with a view of meeting the humane demand that the horrors of war shall not be added to by needless sacrifice of life and suffering of wounded, but upon stern military necessity of maintaining the morale of troops by the assurance of speedy surgical assistance and of relieving the troops themselves of any responsibility for the care and removal of wounded.

The administrative medical officer must therefore have made his plans conform to the situation in order to meet the requirements. He can not meet the indications unless he has a clear conception of the manner in which battlefield operations are conducted, the distribution of troops, the extent of ground covered by them, the space that may have to be crossed under fire and the special function of each arm of the service, the lines over which the enemy is to be approached and the roads that must be left free for advancing troops or ammunition supply. These are all strictly military matters that determine the location of stations and evacuation routes.

He must also study the network of roads, railroads, and waterways that may come in question in connection with the evacuation of sick and wounded.

Theoretically the commander or his chief of staff decides all the important questions concerning the disposition and uses of sanitary units, but in practice the chief surgeon must formulate

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the scheme and in emergencies issue the necessary orders. Field Service Regulations provide that the entire sanitary service may be placed at the disposal of the chief surgeon in case of emergency, and it is understood that the emergencies referred to are liable to arise in any battle.

Much information on the points noted above may be found in the chapters of the new F. S. R. which deal with the conduct of troops on the march and in battle, and they should be included in the theoretical course of instruction for medical officers.

A study of the sanitary service in campaign makes it quite plain that we also must be prepared to undergo all the risks and dangers to which combatant troops are subjected in war. Under modern battle conditions it is essential that the work of the rescue and care of wounded begin at the earliest possible moment. which implies that we must constantly remain in touch with fighting troops, and owing to the long range of firearms and the extent of exposed ground that must be covered in our labors, our service has become more difficult and dangerous. Statistics of recent wars show that the proportion of casualties among sanitary troops has become alarmingly great. It is stated that among Japanese sanitary troops the proportion of losses was next to that of the infantry.

We are non-combatants and the beneficent provisions of the Geneva Convention guarantee us special rights and privileges but no immunity against battle traumatism and we are less favorably situated in the latter respect than some classes of combatant troops.

We have the consolation however, that, notwithstanding our humble position in the military hierarchy, any one of us may be called upon to contribute a man's share to the blood sacrifice that is to be offered on the altar of patriotism.

We also have the consolation that through our professional labors we hope to bring much comfort and relief to the unfortunate victims of disease and the enemy's bullets, and their appreciation of our efforts is dearer to us than the plaudits of the multitude.

We are medical men, first, last and all the time, but as medico-military specialists, we must strive to prepare ourselves for the great emergency of war, and by earnest study and practice of our specialty and only by attaining proficiency in both our professional and military functions can we hope to adequately perform our full duty to our comrades and our country.

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EFFORTS, ACCOMPLISHMENT AND AIM OF THE OHIO NATIONAL GUARD.*

By Major Joseph A. Hall, N. G. Ohio.

THE Medical Department of Ohio has striven during the past year to not only keep pace with her sister states, but, to be in the front rank in her efforts to be prepared should the "call" come. She feels a pardonable pride in the efforts of her sons, who are in the Federal Congress for what they have given all of us in the way of legislation; and the support given by our own officials of the state. A Governor whose motto has been "a Guard, the equal of any in the country," and an Adjutant General, whose every effort has been to upbuild the Ohio National Guard, until today, the Medical Department of Ohio is fully equipped and ready to take the field at a moment's notice, as has been demonstrated on several occasions during the past year. This was accomplished only by the most loyal efforts of not only one, but, every officer and enlisted man in the department, backed by the most loyal support of the home government. We had occasion to call upon the medical corps of the army on several occasions and always found them not only willing, but, anxious to give us their best efforts.

[Major Hall then described the service of the Ohio National Guard during the past year, giving in some detail the tours of service and the annual encampments.]

[The speaker discussed at some length the school for the medical corps which is defined in the following order:]

State of Ohio, Adjutant General's Department,
Office of the Adjutant General, Columbus, Ohio, May 23, 1910.

Circular No. 4.

The following program is announced for the Medical Officers' school to be held in Columbus, Ohio, on June 8th and 9th, 1910, pursuant to Special Order No. 96, Adjutant General's Department, Columbus, Ohio, May 12, 1910:

*Read at the 19th Annual Meeting.

Unfortunately all of the remarks made by Major Hall in presenting his subject to the association are not available for publication. [Editor.]

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Wednesday, June 8, 1910.

9 A. M. At the Columbus Barracks.
Major Henry C. Fisher, Medical Corps, U. S. A.
Physical Examination of Recruits (practical demonstration).
2 P. M. At Starling Ohio Medical College (Park St.).
Major E. L. Munson, Medical Corps, U. S. A.
Camp Sanitation and Medical Organization in the Field.
Discussion opened by Major S. B. Taylor, Medical Corps, O. N. G.
8 P. M.
Officers of the Medical Corps and their friends are invited by Major H. H. Snively to attend a regular drill of Ambulance Company, Section No. 2, O. N. G., at its drill ground, 1368 North High Street.

Thursday, June 9, 1910.

9 A. M. At Starling Ohio Medical College.
Major C. R. Reynolds, Medical Corps, U. S. A.
Manual Medical Department and Field Service Regulations.
Discussion opened by Major F. W. Hendley, Medical Corps, O. N. G.
2 P. M. At Starling Ohio Medical College.
Captain H. F. Pipes, Medical Corps, U. S. A.
Papers and records.
Discussions opened by Major Wm. P. Love, Medical Corps, O. N. G.
Chairman: Major Joseph Hall, Medical Corps, O. N. G., Acting Surgeon General of Ohio.
Secretary: Major H. H. Snively, Medical Corps, O. N. G.
The khaki or olive drab uniform will be worn. No side arms need be worn.
Officers are directed to bring to these meetings their copies of the Field Service Regulations, Manual of the Medical Department, and a note book.
Headquarters will be at the Neil House. (Officers should write immediately for reservations there.)
The Starling Ohio Medical College is situated on Park Street near Buttles Avenue; take a North High Street car, get off at Buttles Avenue, walk a square west and then one-half square south.
To reach the Barracks, take Leonard Avenue car which carries you to the main entrance.

CHARLES C. WEYBRECHT,
Adjutant General.

[Major Hall also submitted the following order which gives in detail the reorganization of the medical department of Ohio in conformity with Field Service Regulations, 1910.]

State of Ohio, Adjutant General's Department,
Office of the Adjutant General, Columbus, June 28, 1910.

General Orders No. 10.

1. In order to comply with the requirements of section 3 of the act of Congress approved January 21, 1903, entitled "An act to promote the effi-

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ciency of the militia, and for other purposes," and section 5190, General Code of Ohio, the Medical Department, Ohio National Guard, will be changed to conform to the organization provided for the United States Army and the Organized Militia of the United States, as prescribed in the Regulations and General Orders of the War Department.

2. The Medical Department of the Ohio National Guard consists of a surgeon general, and of the commissioned and enlisted personnel authorized by law for that department. The personnel of the department and all other persons assigned to duty with that department are collectively called *sanitary troops*.

The Medical Department shall consist of a Medical Corps as follows.

One Surgeon General, and the authorized number of Colonels, Lieutenant Colonels, Majors, Captains and First Lieutenants; and a Hospital Corps, consisting of Sergeants First Class, Sergeants, Corporals, Privates First Class and Privates, as the needs of the service may demand.

3. To provide for the necessary administration of the Medical Department, the following organization is authorized:

One Surgeon General.....to rank as Colonel
One Chief Surgeon for each division authorized.....to rank as Lieutenant Colonel
One Sanitary Inspector for each division authorized..to rank as Major
Thirteen Surgeons.....to rank as Majors
Fifty-four Surgeons.....to rank as Captains or First Lieutenants
and two hundred and eighty-two enlisted hospital corps men.

4. To provide for the necessary medical service in the field, officers and elisted men of the Medical Department will be assigned as follows:

For Division headquarters:
One Lieutenant Colonel, chief surgeon.
One Major, sanitary inspector.
One Major, Assistant to the Chief Surgeon.
One Captain or First Lieutenant.

For a regiment of infantry, cavalry or field artillery:
One Major.
One Captain or First Lieutenant for each battalion.

For a battalion of engineers:
Three Captains or First Lieutenants.

For each battalion of infantry acting independently:
One Captain or First Lieutenant.

For a troop of cavalry, battery of artillery or signal company, each:
One Captain or First Lieutenant.

For Field Hospitals:
One Major, Director of Field Hospitals.

For a Field Hospital:
One Major, Four Captains or First Lieutenants.

For Ambulance Companies:
One Major, Director of Ambulance Companies.

For an Ambulance Company:
Five Captains or First Lieutenants.

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HOSPITAL CORPS.

For Division Headquarters:
One Sergeant First Class.
Six Privates First Class.
For a Field Hospital:

Sergeants First Class	3
Sergeants	6
Privates First Class and Privates	24
Total enlisted (minimum)	33

For an Ambulance Company:

Sergeants First Class	2
Sergeants	7
Privates First Class and Privates	34
Total enlisted (minimum)	43

The usual assignment of Field Hospitals and Ambulance Companies with their complement of officers while in the field shall be for each brigade:

One Field Hospital.
One Ambulance Company.

which, while so acting, will co-operate wih each other.

Enlisted men of the hospital corps will be assigned to troops in the field from the organized Field Hospitals and Ambulance Companies as the needs of the service may demand.

For a battalion of infantry acting independently:

Sergeants	1
Privates First Class and Privates	4
Total enlisted	5

In camp regiments brigaded will establish regimental infirmaries and not regimental hospitals. These infirmaries will care for those slightly sick or injured. All serious cases will be transferred to Field Hospitals. Regiments operating independently will, under proper authority, establish regimental hospitals.

DUTIES IN GENERAL.

5. The Medical Department is charged with the following duties:
(a) The initiation of all hygienic measures to insure the good health of the troops.
(b) The direction and execution of all measures of public health among the inhabitants of occupied territory.
(c) The care of sick and wounded on the march, in camp, on the field of battle and after their removal therefrom.
(d) Methodical disposition of the sick and wounded so as to assure the retention of those effective on the field of battle, and to relieve the fighting force of the non-effective.
(e) Transportation of the sick and wounded.

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(f) Preparation and preservation of individual records of sickness and injury in order that claims may be adjudicated with justice to state and to the soldier.

(g) Prompt acknowledgment of all General, Special and Field orders to the proper authority.

INDIVIDUAL DUTIES.

The duties of the Surgeon General shall be the supervision and administration of the Medical Department under the direction of the Adjutant General of Ohio.

The duties of the Chief Surgeon of a division shall be those prescribed in the Manual Medical Department, U. S. A., and such other duties as may be prescribed by proper authority.

The duties of a Sanitary Inspector are those prescribed in the Manual Medical Department, U. S. A., and in the Field Service Regulations, and such other duties as may be prescribed by proper authority.

The duties of Surgeons on duty with regiments, battalions, batteries, troops of cavalry and signal companies shall be those prescribed in the Manual Medical Department, U. S. A., and such other duties as may be prescribed by proper authority.

The duties of the Director of Field Hospitals shall be those prescribed by the Manual Medical Department, U. S. A., and such other duties as may be prescribed by proper authority.

The duties of the Commanding Officer of a Field Hospital shall be those prescribed in the Manual Medical Department, U. S. A., and such other duties as may be prescribed by proper authority.

The duties of the Director of Ambulance companies shall be those prescribed in the Manual Medical Department, U. S. A., and such other duties as may be prescribed by proper authority.

The duties of the Commanding Officer of an Ambulance Company shall be those prescribed in the Manual Medical Department, U. S. A., and such other duties as may be prescribed by proper authority.

In addition to their duties in caring for the sick and wounded, Medical Officers will, whenever the occasion arises, act as sanitary advisers of commanders of troops. Beginning with assistance in selecting a camp site and a report on the water supply, they continue their functions in maintenance of sanitary conditions by frequent inspections and consequent recommendations.

All Medical Officers addressing military communications to the Arjutant General will forward same through the Surgeon General's office.

SPECIAL DETAILS.

Sanitary Inspectors will be selected by the Adjutant General upon the recommendation of the Surgeon General from the Medical Corps in proportion of one to each division.

When necessary, the Adjutant General may detail officers of the line or other staff corps for duty as *quartermasters or commissaries* to Field Hospitals and Ambulance Companies upon the recommendation of the

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Surgeon General. Medical officers act as quartermasters and commissaries only when other officers are not available.

GUARDS.

Necessary guards for hospitals, for the protection of Medical property and the safe custody of prisoners, will be furnished by the commanding officer from troops of the line on the application of the senior surgeon, who will state, in writing, what particular instructions they wish given to the guards.

Field Hospitals will habitually be guarded by their Ambulance Companies, guards from the line being detailed only when this is impracticable.

6. Appointments to the Medical Corps, Ohio National Guard, are made by the Governor of Ohio, after the applicant has passed a successful examination before a board of medical examiners of the Ohio National Guard designated by the Governor, and have been recommended by the Surgeon General, Ohio National Guard.

An applicant for the Medical Corps, Ohio National Guard, must be over twenty-two years of age, a citizen of the United States, a resident of the State of Ohio, a graduate of a reputable Medical School, legally authorized to confer the degree of Doctor of Medicine, and must be registered to practice medicine and surgery in the State of Ohio.

No person will be appointed to the Medical Corps, Ohio National Guard, unless he has been examined, and approved by a board of medical examiners designated by the Governor and recommended by the Surgeon General.

No person will be appointed to the grade of Captain in the Medical Corps unless he has served three years as a First Lieutenant, Medical Corps, Ohio National Guard, or its equivalent as a commissioned officer in the armies of the United States, or the Organized Militia of the United States, and then only after he has been examined and approved by a board of Medical Examiners, Ohio National Guard, designated by the Governor and has been recommended by the Surgeon General.

7. All preceding orders conflicting with the provisions of this order, are, and are hereby, revoked.

[In closing the speaker, in view of what has already been accomplished, expressed the brightest hopes for the future.]

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THE "INACTIVE" MEDICAL RESERVE CORPS.*

By Lieut. Henry C. Coe, Medical Reserve Corps, U. S. A., New York.

THIS adjective, which has been used to designate the branch of the Medical Corps of which I have the honor to be a recent member, implies a reproach in the public mind which we seem to be unable to remove, for reasons not within our control.

Having always heard the unattached Reserve Corps referred to as a huge joke and its senior members twitted with the fact that they were only aged subalterns on the retired list, the writer hesitated to become enrolled among the number of eminent surgeons, who occupied the anomalous position of commissioned officers in the regular army, without having any apparent appreciation of the fact that in taking the oath of allegiance they had pledged themselves to their country's service just as sacredly as the professional soldier, and, like him, ought to prepare themselves for the emergency which might suddenly transport them from civil to military life.

The average medical man is a good citizen and has been trained to respond instinctively to the call of duty, thinking last of all of himself. If there is (as the late Professor James sought to prove) a "moral equivalent of war," surely no profession is a better exponent of the strenuous life, which develops manliness and unselfishness. There is every reason to infer that one who has daily learned to "endure hardness like a good soldier" will furnish excellent material when put to the test. I doubt not that when the call to arms comes (as come it may) not one of the long list of physicians and surgeons will hesitate to sacrifice his time and skill and lucrative practice for his country, inspired by the simple, unquestioning sense of duty that is the mark of our profession. But, granted their willingness to serve, we may seriously inquire: Of what use will our untrained officers be to the Regular Medical Corps in the field? We are essentially an unknown quantity in time of war, far more than are our worthy confrères in the Militia.

*Read by title at the 19th Annual Meeting.

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Patriotism is something more than a hysteria, suddenly developed by popular excitement, fanned by the flaming headlines of the yellow press. It is a steady devotion, civic, as well as military. A man who accepts a subordinate position in the service at a time of life when he is accustomed to command, must learn to waive all prejudices, all petty distinctions of rank and seniority, and be ready to obey and to learn from those younger in years, but older in experience and special training. Unless it assumes that attitude, the unattached corps will be like the mushroom brigadier generals of the Civil War, who had to be weeder out before the army got down to business.

Soon after receiving his commission, the writer was so fortunate as to be ordered to a maneuver camp for a few weeks, being the only member of the unattached corps who has thus far enjoyed the opportunity of actually familiarizing himself with the duties of the medical officer in the field. He was richly repaid for the service and received such a stimulus in military affairs that he earnestly hopes that the precedent once established will be followed another year. He took his duties seriously, greatly to the amusement of some of his colleagues. He went to learn, and he did learn—more than in any previous three weeks of his life. Doubtless "it is hard to teach an old dog new tricks," but it depends somewhat on the dog.

So many papers have been presented before the Association, describing the personal experience of medical officers at the various maneuver camps, that the writer will not repeat all the valuable lessons he learned. His main purpose is to show why the unattached Medical Corps should be kept in close touch with the regular army by actual service, so that they will be able to perform intelligently the duties of medical officers at short notice. This applies especially to those members of the corps who have had no previous military experience. With all deference to our brothers in the Militia, one can not get into the true atmosphere of army life and feel that he is really an humble part of the great machine unless he has served with regulars. And this is where our corps is highly favored, though subaltern in rank. In the writer's experience, so far from involving any personal inconvenience, or loss of dignity, there is no better mental and physical tonic for a civilian than the rigid discipline of camp life, combined with the constant intercourse with officers and enlisted men.

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It is a novel experience for one who is inclined to think that he is an important personage, to find that he is only a "unit" and not "the whole show." However extensive may have been his experience in hospital work, the civilian soon realizes how helpless he would be when thrown upon his own resources, without the appointments of a modern operating room, while his respect for medical officers is immensely increased when he observes how varied and exacting are their duties. As he begins to learn something about sanitation and camp hygiene it dawns upon him that his army confrère is not only thoroughly conversant with all the recent advances in bacteriology, but has really been the pioneer in applying his knowledge to the prophylaxis and treatment of epidemic diseases. If he is at all conversant with the work of the Medical Corps in our foreign stations, he knows that it is the most beneficent result of our late war.

As he progresses in his new studies and dips into the interesting problems submitted to the medical officer in the field, he comprehends that this department is keeping pace with the others in developing in every possible degree the efficiency of our little army which is to be the nucleus in time of war. Steadily and persistently this silent work is going on, in spite of the discouragement constantly encountered. "War is still a possibility," said our President in a recent speech, and the gospel of "preparedness" finds no more earnest advocates than the men whose duty it is to keep the army up to the point of greatest physical efficiency, both in peace and in war.

The most enthusiastic exponents of universal peace can not deny that the Medical Corps of the three services have won their greatest victories in combating disease, but few, even among the medical profession, realize the self-sacrifice of these devoted men. It is an honor to be admitted to their fellowship. To the laity their life seems narrow, their duties a dull routine. The prosperous physician can not understand how anyone could be an army surgeon, content with moderate means and the simple life. It is the common error of judging by appearances. One who has lived with them knows better. Their high ideals, their devotion to duty, are at once an inspiration and a reproach to us who live at ease and regulate our own time and service. They have never failed in time of trial. Many an unheralded deed of self-sacrifice could be told of obscure medical officers, "of whom the world was not worthy."

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As this is more or less of the nature of a personal confession, the writer may be pardoned for dwelling rather upon the impressions produced by camp life and social intercourse than upon the technical knowledge acquired. From reveille to taps every hour of the day was replete with interest and instruction. Constant association with his medical confrères, as well as with the line officers, awakened in him the same enthusiasm which they showed. He was impressed with the fact that their whole hearts were in their profession. No less pleasant was the meeting with the officers of the militia, a fine, intelligent lot of men, who were most earnest and enthusiastic in their work. The daily routine, drills, inspection, lectures, tactical rides—all appealed to the writer as being the best possible experience for a civilian who wished to learn the real meaning of army life. Among the most pleasant memories were the evenings when we gathered together and talked over the events of the day. Alas! those congenial friends are all separated, some on foreign service, some probably never to meet again—each gone to do his duty.

And then the enlisted men of the ambulance and hospital corps! What pride he came to take in them and how he learned the way to the soldier's heart! For it is only by kindness and justice that his confidence is won. In a few hours he had fallen easily and naturally into his place, as if he had filled it for years and knew what it was to be a soldier—an impression so deep and strong that it can never be effaced.

All this may seem amusing to the lay reader, but it is really serious business, this preparation about which so much is spoken and written at the present day. To our shame be it said, the American people think but lightly of the profession of arms, at once the oldest and the most honorable. There is little enthusiasm among the youth of this generation. They are quite blasé. It seems to be reserved for their elders to keep alive the flickering flame of patriotism. We look around upon a world devoted to selfishness and commercialism, upon the pseudo-patriotism which leaps up temporarily under the influence of popular clamor, upon national honor too often sacrified to false ideas of economy and thank God for the steadfast faith, the simple, manly life of the service, for that devotion to duty, in peace, as well as in war, which seeks no recompense save that which comes to every man when he feels that his work is well done.

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If we turn to General Orders No. 62, Paragraph II, Section 8, relating to the duties of the unattached Medical Reserve Corps it will be readily understood why such a general ignorance prevails as to the functions of this branch of the service. Not only is the term "emergencies" vague and indefinite, but the expression "public interests" is equally so. Whatever may have been in the mind of the framer of the act, it certainly has not been made clear to the public. The proviso is curiously contradictory, viz: "That nothing in this Act shall be construed as authorizing an officer of the Medical Reserve Corps to be ordered upon active duty as herein provided, who is unwilling to accept such service, etc." Unwilling indeed! This seems strange language when applied to a soldier. Where in the annals of military history have the words "order" and "duty" been joined with "willingness?" It would seem to a layman that the anomalous position of the unattached corps is fully explained by this curious act. If we hold commissions in the Army of the United States conditional only upon our willingness to serve, they are not worth the parchment upon which they are written. How many of us would retain our hospital or college positions for a single day upon such an uncertain tenure? If we accept the office, we are bound to obey orders at any cost, else why are we on the list at all? The concluding paragraph, regarding the forfeiting of one's commission, is superfluous.

In order to keep pace with the advances in the regular Medical Corps, to be in sympathy with that spirit of preparedness which now permeates every branch of the service, the "inactive" corps must have at least the same opportunity to learn their duties as militia officers. There are among us many men in the prime of life who are willing and anxious to be assigned to duty at maneuver camps. Is it not a reproach to the service that when they are anxious to fit themselves for greater usefulness they are denied the opportunity? Our present Chief of Staff, who is in such close and active sympathy with the Medical Corps, will surely aid us to the best of his ability.

The objection raised by the War Department against ordering members of the Reserve Corps to active duty in camps of instruction is that such a duty is not really an "emergency." Doubtless an actual state of war was implied by this word. If so, it should be so defined, or else further latitude should be allowed. It is greatly to be desired that an amendment, or addition, to this sec-

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tion of the act should be made, providing that a certain number of men be detailed each year in order to learn the duties of medical officers in the field, serving as junior subalterns in the corps. If the important objection of expense is raised that could be met by waiving the question of pay, which would not deter any man really interested in the work from spending a fortnight, or more, in camp without putting the government to any additional outlay, except for his rations and transportation. The writer earnestly hopes that this important matter may receive the attention of the Department, so that another year will see the term "inactive" no longer applied to a branch of the Medical Corps which is likely to assume considerable importance when the "emergency" arises, which calls us into active service That any officer in the army should be merely "dead wood", is contrary to the spirit of the times. It seems as if we would never learn that in such a highly specialized profession as that of the Army Medical Officer the training must precede, not be (theoretically) developed by the emergency. We do not apply such an absurd principle in civil practice, why then in the more complicated service of camp and field? It is time that we should cease to be mere idle spectators and "get into the game."

The writer is unwilling to accept the pessimistic view that patriotism has been so overgrown by commercialism, that it has ceased to be the deep, underlying principle of our national life, and is merely a beautiful sentiment. Still less will he admit that the high traditions of the medical profession have been forgotten in the race for wealth. In peace, or in war, we shall still be found close to the firing line, not heroes, but imbued no less than the fighting men with the essential spirit of the true soldier, that "he that loveth his life shall lose it."

"Oh! God, spare my life and let me die in battle," prayed the gallant Ringgold, as he tossed upon a bed of sickness. Richly was his prayer answered. To few of us may it be granted to set this perfect seal upon our service to our country. But, if we can not die for her, we can live for her. Whether in camp, or on the bloody field, amid the "pestilence that walketh in darkness," in the quiet laboratory, or in the daily routine of civil practice, we are soldiers all, and from our hearts rises the silent orison: "Show us the path of duty and help us to walk in it to the end."

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THE MEDICAL DEPARTMENT AT SEA IN ITS PARALLELISM TO THE CONSTRUCTION AND ADMINISTRATION OF NAVAL HOSPITALS AS SEEN BY A FLEET SURGEON.*

By Surgeon A. M. D. McCormick, U. S. N.

THE Medical Department at sea differs from the other half of its life cycle on shore in its modus operandi and vivendi. Starting with the construction, the first requisite on shore is a firm foundation, at sea, it is as movable as the waves. On shore the essentials in building a hospital are light, air, drainage, water and freedom from noise; at sea all our surroundings are artificial. The light, being electric, is glaringly so, causing most of our eye troubles. The ventilation is artificial, being forced; sometimes the method is supply; sometimes exhaust; occasionally a combination of the two. The water is artificial, being distilled; having no earthly salts to give up to the tissues, it should be considered from a hygienic standpoint, for, by the process of osmosis, it absorbs from the tissues and does not build up, but tears down. Frequent decay of teeth among navy men may be attributed to this cause. Perhaps the nervous system suffers from a lack of phosphates, giving us a good percentage of neurasthenics.

Therefore we see that the tripod, light, air and water, upon which health rests and hospital construction depends is modified at sea, and should give the sanitarian and the naval constructor something to think about, especially to design living compartments with an abundant supply of air. The calculations of the supply should be based upon the worst sea-going conditions, as when the ship is battened down and many of the intakes, as those on the forecastles, have to be removed. It was estimated that in the voyage around the world that the louvers on the forecastles were down at least one-third of the time, and as the sick quarters are located in the forward part of the ship, the sick, who are most in need of fresh air, suffered most. The ventilating methods were generally condemned.

*Read by title at the 19th Annual Meeting.

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It is the duty of the Fleet Surgeon when inspecting the sanitation of the sick bay to pay special attention to the ventilation, including the cubic space, number of beds, and air per man; also to require medical officers to make frequent observations as to the temperature and purity of the air; noting the number of times the blowers have to be shut down from one cause or another, so that data may be accumulated upon which to base a report and make proper recommendations for a perfect system of supply and exhaust.

The intakes should be so located on the superstructure dock that they will not be affected by weather. The indifference with which these recommendations are often received is discouraging, but a great deal has been accomplished by much repetition, and the surgeons, backed by the Medical Department, will continue to pursue the thorny path which leads to the betterment of the health of the Navy.

In carrying out the analogy to hospital conditions, our simplest problem is the disposal of sewage, for the ocean, the great purifier of the universe, is there to receive it. It is not necessary to disinfect the typhoid stool, for the danger of infection of the deep sea fish is not considered like that of the oyster. The drinking water may contain sodium chloride, but this does not make it suspicious as to organic contamination as it would if obtained from a natural source, but indicates a leak in the distiller. Taking into consideration its distilled purity and being drunk from the Gates' hygienic fountain, we have the advantage at sea. But the question is (as I have before stated) is not the continual drinking of distilled water detrimental to health?

The heating of our Medical Department is simplified for we always have steam on tap, and the same pipe supplies steam for sterilizing dressings and instruments, and can be made use of on a larger scale for disinfecting bedding in case of typhoid fever or other contagious or infectious diseases.

In regard to noise; we are often at a disadvantage on a battleship. You have no idea how many noises there are until you listen for crepitant rales; then you become conscious of the hum of the blowers, the rattling of the anchor chains, or hammering or chipping, all of which are insignificant compared with the report of a great gun.

The duties of Fleet Surgeon are not comparable with those of Commanding Officer of a hospital, except in the event that the

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Fleet Surgeon be made commanding officer of the hospital ship attached to the fleet, as was suggested by Medical Inspector Curtis in a paper read before the Association last year. This plan has certain features in its favor which were demonstrated in that paper. Since the usefulness of hospital ships in increasing the battleship efficiency of a fleet has been recognized, and giving the command of them to medical officers has tended toward their efficiency, that command should be firmly established by law, so that there may be a definite organization. By combining the duties of Fleet Surgeon, who should be at the head of an organized medical corps afloat, and those of Commanding Officer, it is thought that the best results will be obtained for the welfare of the Navy. There can be no good results without organization and system. The Fleet Surgeon and Commanding Officer of this fleet auxiliary would be on the staff of the Commander-in-Chief, and would, as now, act as his medical adviser, as consultant for the medical officers of the fleet, as supervising surgeon, as chief sanitarian, as inspector and as purveyor of requisitions, official reports and returns. As medical adviser to the Commander-in-Chief, he is the health officer of the fleet and is concerned with keeping disease out of it and the hygiene up to the most perfect standard in order that the personnel may attain the highest efficiency and the Government be least taxed by paying sick or pensioning disabled sailors. The diseases from which men suffer may be divided into two classes: preventable and non-preventable. It is in guarding against the former that we have to be the watch dogs of battleships, and the Fleet Surgeon is especially concerned in having uniform regulations adopted for preventing the introduction of and, if introduced, the spread of communicable diseases as measles, mumps, scarlet fever, small-pox, etc.

Then we have to institute prophylaxis for the venereal diseases which are so prevalent in the Navy and so crippling to the personnel. To recommend regulations which will accomplish this efficiently and systematically, without giving offense within or without the service, is one of our hardest problems. Up to the present time venereal prophylaxis has been more successful away from home, as in Asiatic waters, than in our own; but as the result of a recent order issued to the North Atlantic Fleet, it is thought that this will no longer be the case. The same system should be in force in all the ships so that definite results can be obtained and compared.

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As supervising surgeon it is part of the Fleet Surgeon's duty to see that instruction in first aid methods is given to officers and men. On account of the centralization of the forces in the modern battleship, when the men will be isolated and confined in turrets, handling rooms, magazines and water-tight compartments, the doors of the latter being closed during action, it will be impossible for the Medical Officer to reach the injured, and very little surgical aid can be given until after the battle is over; consequently, great importance is to be laid upon first-aid dressings. With this in mind it has been recommended that in addition to the regular instruction, special instruction be given turret officers and those in charge of guns in the principles of applying shell wound dressings, and that they give a few minutes of their drill period, once a week to instructing members of their guns' crews. It is difficult to impress upon well and strong men the necessity of being able to care for themselves or others when injured and first aid instructions generally go in one ear and out the other, but we have occasion several time a year on our ships to put our first aid knowledge into effect, and it is not necessary to wait for a war. No man is more highly commended, or has more reason to be proud than he who, knowing what to do in an emergency, helps to save the life of a comrade. It is worth while for medical officers to see that every one is thoroughly instructed.

The medical department at sea has no distinct commissary provision. The sick are fed on liquid food provided on the supply table, with the addition of such articles of food as milk, eggs and fruit, obtained from the ward room mess on approved requisition. This method has worked satisfactorily and separate arrangement for cooking special diet has not been found necessary except on the hospital ship.

Ward administration is directly under the ship's surgeon, as each sick bay is his ward. The sick bay of the Michigan has thirty-four beds, including four in the isolation ward. It offers a good field for system in its arrangement and administration, which should be patterned as much as possible after the approved methods practiced on shore, starting with cleanliness and making of beds, the bathing of patients and clean clothes on being put to bed, the keeping of clinical charts and bedside records, and doing the many things experience has taught to be for the comfort of the sick. It is necessary to impress upon the hospital attendants that nothing is too small to be overlooked in the care and

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treatment of patients. The Book of Instructions for Medical officers provides for the systematic instructions of the hospital corps in all the duties pertaining to their grades, and it is one of the duties of the Fleet Surgeon to ascertain during his inspections if this instruction has been given.

Good use has been made of the wards of hospital ship for general instructions of medical officers. The medical and surgical material furnished by sixteen battleships and auxiliaries, having combined crews of about 18,000 men is, necessarily, abundant and varied. Clinics were inaugurated and held twice a week on the hospital ship during the past winter and were found to be of great interest and instruction. As they were given in Guantanamo Bay, at a time when otherwise there would have been little of professional interest for medical officers, they were stimulating and filled a long felt want.

The duties of the Fleet Surgeon as purveyor is in charge of the office work, and is connected with official papers, such as requisitions, sanitary reports, and property returns. The Fleet Regulations require the following reports to be made by the Fleet Surgeon:

(1) Sanitary inspection of hospitals, foreign stations.
(2) General sanitary report of station.
(3) Sanitary inspection of ship.
(4) Tabulated report of killed and wounded after battle.
(5) Transfer of patients to and from hospitals on foreign stations.

The following reports are required to be acted upon:

(1) Requisitions for supplies.
(2) Report of Medical Survey.
(3) Survey of Medical Property.
(4) Inventory of Property.
(5) Sanitary Report.
(6) Statistical Report.
(7) Report of Epidemic Diseases.
(8) Report of Death.

As to laboratory work.—There is a desire to encourage it on board of all of the ships and take advantage of the material offered; the Bureau provides a microscope and accessories and an outfit for chemical analysis. The Fleet Surgeon has recommended

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that reports be made quarterly of examinations of blood, urine, feces, throat cultures and pus, and what bearing they may have upon the case under treatment, reports of interesting cases being especially desired. This should help to stimulate the professional zeal of the medical officers, and encourage them to keep up to date in this part of their profession.

As inspector, the duties of Fleet Surgeon are most important, and have given the title to the grade from which he is generally selected. He is supposed to be well fitted for the position by years of experience in the Navy, so that he has become familiar with the needs of the service ashore and afloat. Besides practical knowledge gained from experience and theoretical from books, he should have acquired tact in dealing with men and be the natural possessor of the courage of his convictions. Inspections to be made may be of ships, hospitals or camps. Inspections of ships include that of the Medical Department, the sanitation of the ship, and the drill efficiency of the Hospital Corps.

Inspection of the Medical Department includes the treatment of the sick by the medical officers, and if the senior medical officer has complied with the regulations for instructing the crew in first aid to the wounded, and if he has complied with the instructions relating to the drill prescribed for the Hospital Corps; also a careful examination of the sick bay, dispensary, medical store rooms, hospital stores and medicums, medical journal and other records, and instruments.

A sanitary inspection of a ship in case of epidemics, or much sickness, includes an examination of the bunkers, holds, bilges, closets, food, water, ventilation, or anything which he may consider necessary.

Inspection of the drill efficiency of the Hospital Corps occurs when the Fleet Surgeon inspects the staff of the Flag Officer and includes:

(1) *At clear ship for action.*—The arrangements of the Medical Department, as to their efficiency and sufficiency for the requirements for action, and will ascertain if the relief station crews are well instructed in their duties.

(2) *At general quarters.*—The actual drill efficiency of the Medical Department in battle, including first aid and the transportation of the wounded, and provision for central dressing stations.

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(3) *At collision and fire drill.*—The provisions for saving the sick; also that inflammable liquids are looked out for.

(4) *At abandon ship.*—That all men are able to leave the sick bay, stretchers being on hand for the bed-ridden.

(5) *At battalion and landing drills.*—The inspection of the ambulance party, medical outfit, etc.

In making inspections of hospitals the following details are to be considered:

(1) Topography of the grounds.
(2) Condition of the buildings.
(3) Water supply.
(4) Heating, ventilating and lighting.
(5) Condition of wards and operating rooms.
(6) Dietetic appointments.
(7) Methods of transportation of the sick and wounded.
(8) The personnel.
(9) Facilities for treating contagious diseases.
(10) Facilities for bacteriological and chemical work.
(11) Facilities for disposing of the dead.

Inspection of camps includes:

(1) Site, mode of pitching the tents, and provisions with mosquito netting, and direction of prevailing wind.

(2) Water.—Source and analysis, need of boiling and intelligent supervision.

(3) Clothing.—Need of changing on account of weather and protection from dews, rain and direct rays of the sun.

(4) Food.—Cooking and serving and regularity of meals. Fruits to be allowed which can be skinned or cooked. No uncooked vegetables where there is a suspicion of night soil being used.

(5) Latrines.—Location and description.

(6) Camp refuse.—Mode of disposal. Cleanliness of grounds. Frequency of inspection of medical officers.

(7) Quarantine.—Necessity for special regulations in individual cases.

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THE DUTIES OF THE SUPERVISING SURGEON OF A NAVAL HOSPITAL.*

By Surgeon Edward M. Shipp, U. S. Navy.

THE book of instructions for medical officers of the United States Navy, issued by the Navy Department in 1906, states that the medical officer attached to a naval hospital, next in rank to the medical officer in command, is considered as the supervising surgeon of the hospital, and that, under the direction and supervision of the medical officer in command, he shall be responsible for the discipline, cleanliness, and management of the institution. So that here, in a few words, we have it definitely stated that the supervising surgeon is always next in rank to the medical officer in command, and that his duties are manifold and exacting.

Our modern naval hospitals compare favorably with the newest and best civil institutions of all the large cities, both as to construction and equipment; in fact, they are splendid institutions, accommodating in many instances several hundred patients, with quarters for the house staff, the female nurses, the members of the hospital corps, and the civil employes; provided with extensive heating and lighting plants and the necessary outbuildings, all situated within extensive grounds, with lawns, driveways, paths, and shrubbery to be cared for and kept in order. Therefore, I believe that so far as practicable only strong and energetic officers of known professional ability and experience and possessing unquestioned executive qualifications should be detailed as supervising surgeons. Furthermore, each detail should be made as permanent as possible in order to avoid the confusion and changes that inevitably result from frequent change of officers charged with executive duties.

Before describing in detail the duties of the supervising surgeon perhaps it may be well to state that, in the execution of his duties, the supervising surgeon has no authority independent of the medical officer in command of the hospital.

I shall now describe in detail the duties of the supervising surgeon under two headings, professional and administrative:

*Read by title at the 19th Annual Meeting.

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Professional Duties.—He should have charge of all sick officers and, in addition, should exercise general supervision over all the patients in the hospital, keeping himself informed of their condition, the nature of the treatment that is being prescribed in the more important cases and the methods used in verifying or making the diagnosis in each case. He should be ready and willing at all times to consult with and advise the junior medical officers with regard to their patients and to direct, if he deems it necessary, the treatment; but in such cases he should report the circumstances to the medical officer in command. He should, whenever deemed necessary, examine every patient requiring a surgical operation of importance or that may require a general anesthetic and decide, subject to the approval of the medical officer in command, when and by whom the operation is to be performed, having in mind always that the junior medical officers should be encouraged to perform operations and that they should be given every opportunity to acquire practical training and experience in the operating room. Furthermore, he should satisfy himself that proper aseptic precautions are observed as to instruments, dressings and preparation of the patient, and that every means is at hand to guard against accident from the general anesthetic. He should see that all seriously ill patients are provided with competent day and night nureses, and that all contagious cases are properly diagnosed, isolated and treated.

When the patient is recommended by a junior medical officer for medical survey or discharge to duty, he should satisfy himself that the condition of the patient is such as to warrant such action, and that the medical history in each case is full and correect

Administrative Duties.—The supervising surgeon should make himself familiar with the laws, regulations and instructions given in the Navy Regulations and Book of Instructions relating to the administration of naval hospitals. He should at all times, in conducting the affairs of the hospital, keep himself informed concerning the wishes of the medical officer in command in matters of detail and administration. Furthermore, he should keep the medical officer in command fully informed of all matters of interest or importance that may in any way concern the patients or institution under his command.

He should receive all orders relating to the general duties of the hospital directly from the medical officer in command, and

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transmit them to the junior medical officers when necessary, and should be responsible for their execution.

It is the duty of the supervising surgeon to execute all details of organization, police, inspection and discipline and he should be responsible for the cleanliness, good order and preservation of the buildings, grounds and all equipment.

He should, under the instruction of the commanding officer, prescribe from day to day the uniform to be worn by the officers and enlisted men. He should see that all employes report for duty at the proper time each morning and should satisfy himself that they are honest, sober and attentive to duty.

He should report to the medical officer in command each morning the names of any employes, nurses, patients or others who may be absent over leave or without permission from the proper authority.

He should see that the junior medical officers visit their wards at the proper time, morning and evening, and should report to the medical officer in command any inattention or neglect of duty on their part.

He should inspect daily all parts of the hospital, except the quarters of the junior medical officers, as soon after the morning visit to the wards as may be practicable and should see that the entire hospital is clean and in order, paying special attention to the kitchen, mess rooms, diet kitchens and wards.

He should see that the fresh meats and provisions are inspected by the medical officer of the day and the weights verified when received. He should also see that a record of all rejections of fresh meats and vegetables made by the medical officer of the day is entered in the journal giving the cause of rejection, date and name of the contractor, for future reference.

He should see that all food is inspected by a responsible person after being cooked and placed on the mess tables, and he should personally inspect the meals frequently, when served, to assure himself that the food has been properly prepared and that it is of good quality and of sufficient quantity. He should direct the hospital steward in charge of the mess room to take charge of all convalescents and hospital corps men who take their meals in the mess room and have them, at meal time, form in two ranks, then march in and, when ordered to do so, take their seats. He should direct that the special diet sheets for the wards be corrected daily and turned into his office for inspection with a view

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of preventing waste and neglect on the part of the nurses. He should detail attendants for the various messes and should give the diet and messing arrangements for the sick officers his personal attention.

He should see that all stores are inspected by a responsible person when received and then stored in the proper storerooms. He should also direct that stores are not to be issued except by authorized persons and in such quantities and at such times as he may designate. Furthermore, he should see that a separate inventory book is kept for the provision storeroom, the medical storeroom and the linen room, which should be kept posted and up-to-date at all times. It is the duty of the supervising surgeon to see that the main hospital, contagious wards, quarters for nurses and outbuildings are kept clean and in repair and that the plumbing, heating, electric lighting fixtures, furniture and equipment generally are maintained in the highest possible degree of efficiency. To this end he should direct the making of all repairs, painting, alterations, etc., and should submit to the medical officer in command from time to time his recommendations for improvements, repairs and alterations that may seem desirable or necessary but which cannot be properly made by the hospital force. He should endeavor at all times to maintain the institution with due regard for economy, preventing waste or useless expenditure of government stores whenever possible, but keeping always in mind a high standard of efficiency.

He should see that the fire hose, couplings, pumps, alarms and hydrants are at all times ready for immediate use and should prepare a fire bill embracing employes, members of the hospital corps and such convalescents as may be available; have it posted in suitable places and should see that all are familiar with their duties by exercising at fire drill at such times as the medical officer in command may direct.

He should make the necessary arrangements for all funerals and keep himself informed of the laws and regulations, both municipal and state, governing the preparation, removal and transportation of the remains of deceased persons. Furthermore, he should cause an inventory to be made of the effects of any patient who may die in the hospital and should see that the effects are disposed of, under the direction of the commanding officer, in accordance with the requirements of the Navy Regulations. He should see that autopsies are performed whenever

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practicable and that a death certificate is prepared in every case; also that the name of the deceased person and the place of burial are entered in the cemetery book.

Twice monthly he should have prepared clothing and small store requisitions for patients and members of the hospital corps who may desire to draw stores; once each month he should have prepared and submit to the medical officer in command a requisition for monthly money for the members of the hospital corps and patients; a weekly pay roll is to be prepared under his supervision for the civil employes.

When patients are admitted to the hospital he should see that they are assigned to the proper wards and that their clothing and personal effects are taken charge of by the master-at-arms.

He should see that a medical officer is always at hand to receive the patients, make the necessary examinations and prescribe the treatment that may be required. He should assure himself that the necessary transfer papers and hospital ticket are received and entered upon the hospital records and that a case paper is kept in the case of every patient admitted to the hospital. When a patient is discharged from the hospital he should see that a conduct report and other necessary transfer papers are made out for the signature of the commanding officer and that the man receipts for his clothing and personal effects.

He should see that the ambulance service is prompt and efficient and that a driver is available, both night and day.

He should see that men who have been confined for punishment or safe keeping are visited by the medical officer of the day and inspected by the master-at-arms as often as may be deemed necessary; also that the insane patients are properly and safely confined and that they receive the necessary care and attention.

He should see that the name and address of the next of kin is obtained as a matter of routine from every patient admitted into the hospital; and whenever a patient is considered to be seriously or critically ill, the supervising surgeon should see that the parents, wife or next of kin of the patient is promptly notified of his condition. He should also, subject to the approval of the commanding officer, see that the next of kin is promptly notified in case of death of any person in the hospital, thus affording an opportunity to claim the remains before the body is interred in the Naval Cemetery. The supervising surgeon should take charge of all valuables that seriously ill patients may have when

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admitted to the hospital and deposit them in the hospital safe, keeping a record of all such deposits.

He should see that the operating rooms, sterilizers, X-ray room and laboratory are kept clean and ready for immediate use at all times; also that a suitable supply of sterile towels, dressings, sheets, gowns, etc., are always on hand for use in case of emergency.

He should see that all weekly, quarterly, semi-annual and annual returns, requisitions and bills are prepared at the proper time and assure himself of their correctness before submitting them to the medical officer in command. He should issue passes to all patients, employes and members of the hospital corps to whom liberty may be granted. He should inspect, or cause to be inspected, from time to time, the clothing and outfit of the men of the hospital corps to see that each one has the necessary uniforms and that they conform to the requirements of the uniform regulations of the U. S. Navy.

He should see that the members of the hospital corps are given stretcher drill and instruction in first aid and nursing as often as circumstances will permit. He should direct the detailing of all nurses for general and special duties, and should pass upon the fitness of the men of the hospital corps for promotion, subject to the approval of the medical officer in command, conducting the examination when he deems it necessary. He should also see that a conduct and efficiency book is kept, upon which should be entered a full record of all offenses, punishments, marks, etc., of every nurse and member of the hospital corps attached to the hospital.

He should promptly suppress disorder, correct abuses and maintain discipline at all times. To this end he should report to the medical officer in command the name of every offender, the ntaure of the offense and cause to be entered in a book kept for that purpose a complete statement of the case, together with the punishment awarded by the medical officer in command.

Under the direction of the commanding officer he should grant permission to the junior medical officers and others to leave the hospital, but such leave should not extend beyond eight a. m., of the following morning. He should have charge of the detailing of convalescents for light duty and should see that no tubercular or syphilitic patient is detailed for duty in the mess room or kitchen, nor as an attendant upon any other patient, unless such

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patient is infected with the same disease. He should direct that all specific cases have separate bathing facilities and separate messing arrangements. He should, under the direction of the medical officer in command, establish rules and regulations governing the hours and conditions under which patients may receive visitors. Subject to the approval of the commanding officer, he should arrange the time when Divine service may be conducted in the hospital chapel, and should, whenever possible, see that the services of a priest or chaplain are available for patients who may express a desire for spiritual comfort.

He should see that the library is kept in good condition and that reading material, as far as practicable, is always available for the use of patients. He should see that the hospital corps men and convalescents are provided with the athletic outfit furnished by the Department, and that they have suitable hours for recreation and outdoor games. He should see that a bulletin board is hung in a suitable place where a copy of all orders or notices issued by the medical officer in command, and general and special orders issued by the Department of interest to the enlisted men may be posted.

He should see that all convalescents are given an opportunity to use the hospital laundry as often as may be necessary to keep their clothing clean, and that every patient when discharged to duty, leaves the hospital with a clean bag and hammock and in the uniform of the day. He should assure himself that the bedding and clothing of patients admitted to the hospital with infectious or contagious diseases are properly disinfected before they are permitted to leave the institution.

The supervising surgeon should see that the cemetery is kept in good condition and that the graves are properly marked for future identification. He should be the custodian of all keys and require that they be marked and hung on the key board when not in use.

He should have charge of the inventory and bill books and the cemetery records and be responsible to the medical officer in command for their correct keeping. From time to time he should hold a property survey on all articles on charge that are no longer serviceable.

He should prepare a cleaning bill for the guidance of the nurses in charge of the yards and should hold them strictly to account for the cleanliness and good order of that part of the

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hospital directly under their charge. He should also endeavor, as far as practicable, to beautify the grounds and make the hospital and its surroundings attractive. To this end he should see that the paths, sidewalks and driveways are kept clean and in repair and that the lawns and shrubbery receive proper attention.

He should, with the approval of the medical officer in command, see that all coal delivered by contract for hosiptal consumption is inspected and weights verified by a responsible person when received.

With the approval of the commanding officer, he should see that the boilers, safety valves and connections of the steam heating plant are overhauled and tested by a qualified expert once a year.

He should see that all alcoholics and inflammable liquids are stored in such a manner as to prevent theft and to minimize danger in case of fire.

It is the duty of the supervising surgeon to accompany the medical officer in command on his weekly inspection of the hospital, outbuildings, etc., and to direct his attention to any defects that may have become apparent since the last inspection.

He should also cause to be kept an address book for use in forwarding mail matter to patients who have been discharged from the hospital.

He should see that a suitable place and proper receptacles are provided for depositing ashes, refuse, etc., and that a contract be made with a reliable person to remove such waste material as often as may be necessary. All garbage should be removed or burned daily. He should see that the hospital laundry and the disinfecting plant are kept in an efficient working condition and ready for use at all times. He should also see that no animals are kept in the hospital or grounds except those authorized by the Navy Regulations or by order of the medical officer in command.

He should see that the office of the medical officer of the day is open for the transaction of business at all times during the day and that the officer of the day is on hand and available for duty except at meal hours or when called away by professional or other duties.

The supervising surgeon should always be on duty when in the hospital but he should not be called upon to perform the du-

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ties of officer of the day except in cases of emergency. In small hospitals where there are but two medical officers on duty, besides the officer in command, the supervising surgeon should, in addition to his regular duties, take professional charge of as many patients as the officer in command may direct.

He should interest himself in the welfare of the female nurses and the members of the hospital corps who may be attached to the hospital and endeavor to keep them cheerful, contented and happy, and as far as possible create a feeling of pride in the institution and enthusiasm for their duties.

In dealing with the members of the hospital corps, patients, employes and others who are subject to his orders, he should in every instance and under all circumstances conduct himself with the utmost fairness and justice toward all, having always in mind the welfare of the patients and the efficiency of the institution.

In conclusion I desire to say that the term executive surgeon having been authorized by the Department is now in use.

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PRACTICAL POINTS IN THE DIAGNOSIS AND TREATMENT OF ASIATIC CHOLERA.*

By P. A. Surgeon Allan J. McLaughlin, U. S. P. H. & M.-H. S.

ETIOLOGY.

IN 1883 Robert Koch demonstrated that Asiatic Cholera is an intestinal disease caused by a comma-shaped bacillus found in the contents or walls of the intestine. He demonstrated the connection between an infected cistern and a severe outbreak of cholera. His findings were doubted at first by some, but were soon verified in thousands of cases in later epidemics by other workers. The finding of vibrios in individuals who are not sick does not weaken the etiological significance of the cholera vibrio. It is well known that these bacillus carriers exist in many other diseases, and the development of the disease depends not only upon the presence of the etiological factor but also upon the susceptibility of the individual. Since the perfection of the serum diagnosis especially due to the classical work of Kolle, the degree of illness, the clinical picture, the morphology and cultural characteristics of the vibrio are of secondary importance in diagnosis and the application of serum diagnosis determines positively the existence of cholera infection in an individual whether he be very ill, slightly ill, or apparently healthy.

MORPHOLOGY.

In stained preparations the cholera vibrio is a short slightly curved rod 1.5 mikrons in length and 0.4 mikrons in width—by juxtaposition of two or more curved organisms, we find spirals, "S" shaped, "U" shaped and other forms. Great variation is possible in different strains, in length, thickness and degree of curvature. Some forms have little curve and approach the ovoid coccobacillus type. Great variation from type is more apt to be found

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in old cultures which have been kept on artificial media for long periods. In these long threads or spirals are often found and the curve may be entirely absent. Cultures not more than 24 hours' old and freshly isolated from stools will be generally found to conform to the type described above. The motility of the cholera vibrios is remarkable. In a hanging drop they shoot through the field with great rapidity. That the motility is due to a single flagellum has been demonstrated by Kolle and his co-workers,—non-cholera vibrio have frequently 2 to 6 flagella.

The cholera vibrio does not form spores, hence is easily killed. Forms which did not stain well and light staining spots have been shown by Kitasato, van Ermengem, and others to be sterile involution forms.

Single individuals of different cholera stains may differ greatly. Some individual vibrios are long and slim and very slightly curved, others are short and sharply curved, while some are short and have so little curve that they are almost of the cocco-bacillus type. These variations simply demonstrate that morphology cannot be relied upon for diagnosis. All that one can say is that a vibrio is present, its exact identification will depend entirely upon biologic reactions.

CULTURAL CHARACTERISTICS.

Cholera vibrios are easily cultivated upon the ordinary media, but for practical purposes only peptone and agar media need be considered. Gelatine has been discarded by practically all workers. It has no advantage over agar and its disadvantages are manifest. Upon peptone within from 4 to 18 hours the cholera growth is evidenced by turbidity of the media and by a dense cloudy zone near the surface of the liquid. The intensity of this cloudiness depends upon the age of the culture. A distinct surface film forms, but it is delicate and not thick in pure culture, and scarcely perceptible before 18 hours. Upon agar the cholera colonies are characteristic and easily diferentiated with a little practice from B. Coli and other common intestinal bacteria. Its cultural characteristics are shared, however, by many non-cholera vibrios and cultural characteristics like morphology fails to differentiate the cholera from many non-cholera vibrios. The colonies of B. Coli on ordinary agar are whitish and opaque, while the cholera colonies are pale semi-transparent discs, which show

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by transmitted light an opalescent or irridescent quality, which is rarely shown except by vibrios.

Dieudonnè's Elective Blood Agar Media has the advantage of inhibiting many of the common intestinal and air borne organisms. Cholera and some other vibrios grow luxuriantly upon it and the colonies have a dirty gray appearance the color of pus with a tinge of blood in it. Dieudonnè's media is of very slight importance to the practiced worker in view of the fact that there is no difficulty in securing isolated cholera colonies or ordinary alkaline agar media with the methods now generally employed.

The "Cholera red" reaction.—By adding 3 or 4 drops of concentrated chemically pure sulphuric acid to an 18 hour pepton or bouillon culture of cholera, a color varying from rose pink to the color of Burgundy wine is produced. This characteristic is valueless for exact diagnostic purposes because it is also exhibited by many other vibrios.

Failure to produce cholera red should not be charged to the vibrio until the peptone solution has been tested with organisms which are known to produce cholera red. It is said that the presence of glucose in the peptone is responsible for the failure of the reaction. The peptone of Chapoteau seems more reliable than that of Witte for peptone solution intended for the cholera red test.

PATHOLOGY.

The appearance of the cadaver in cholera is characteristic—cyanosis is marked. The skin is dry and the abdomen retracted; the eyes are sunken and half closed. Rigor mortis sets in early, and muscular movements, especially of the fingers, may occur for some hours after death. Upon opening the body the tissues are found to be dry and the serous cavities without fluid. The blood exuding from the organs on section is thick and tarry. The right heart and venous system are engorged with blood. The left heart and arterial system empty. The skin of the fingers and toes is shrivelled; the so-called "Washerwoman's fingers." The injection of the small intestine gives it a pinkish color which is very striking by comparison with the large bowel or with normal intestines. Upon opening the peritoneum the intestines will be found to be without lustre and covered with a peculiar sticky material which, with the diffuse pink color of the small intestine, is pathognomonic of cholera.

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There is usually a parenchymatous nephritis of varying intensity according to the stage of the disease. Parenchymatous changes in other organs may be slight or absent. The changes in the intestine depend upon the duration of the disease. The longer the disease has existed before death the greater the changes in the intestinal tissues. If death takes place in a few hours we have only the rosy flush shown by injection of the small intestine and the intestine filled with a clear fluid in which flakes of mucous and epithelial cells are suspended, or the fluid may be slightly blood tinged. Intestinal contents in cholera have been likened to sago water, rice water, and pea soup. These terms are self explanatory and represent variations due to death occurring in different stages of the disease. When the disease has existed for some time before death the epithelial lining is denuded, the sub-mucosa red and inflamed especially around the solitary follicles and Peyer's patches. Section of the intestine shows microscopically the presence of vibrios in the mucosa and as deep as the sub-mucosa. The vibrios will also be found beneath the epithelial lining of the gland ducts. More severe lesions, of a necrotic or diptheritic character are found in cases of long duration (the so-called "Cholera-typhoid"), but these changes are not common and are due to complication and mixed infection with other organisms.

CLINICAL PICTURE.

As in all other infections the clinical picture varies in severity. We have in Asiatic Cholera every gradation from the severest fulminant case of *cholera sicca* fatal in a few hours to the bacillus carrier, who has absolutely no symptoms and whose infection is accidentally discovered. With such variety of types it seems futile to attempt description and classification as with the exception of the classical type picture description of the other forms would not be a great aid to diagnosis. In typical cases, with vomiting, diarrhoea of a rice water character, cramps in the abdomen, legs and arms, subnormal temperature, loss of voice, failure of the pulse and collapse, the diagnosis is not difficult and this symptom complex forms a picture once seen, never forgotten.

In addition to typical cases, however, we have occasionally cases fatal in a few hours without diarrhoea (cholera sicca) and

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very often atypical cases in which many if not all of the classical symptoms are absent.

These atypical cases are the more dangerous because they frequently end in recovery and being unrecognized serve to spread the disease. They may have no symptom except a diarrhoea which may or may not be choleraic in character. In times of cholera danger the only safeguard is to examine the stools of all such diarrhoeas. If bacteriological examination of the stools is not feasible, the stools should be treated as infectious for the protection of the public.

Symptoms of typical cholera.—The so-called prodomal symptoms of cholera are too vague to be of any value in diagnosis. Writers speak of premonitory diarrhoea, but this symptom if present would never suggest cholera, unless in the diarrhoeal discharge vibrios were present.

In the writer's experience cholera cases are either atypical from the beginning or being suddenly without noticeable prodromes. Typical cholera begins with profuse watery stools. The faecal character of the first stools is soon lost and the discharge assumes the appearance of thin rice water with flocculi or granules of mucous suspended therein. The first vomited material may contain food, but later the vomitus is thin and watery resembling rice water. Muscular cramps in the abdomen and limbs cause great suffering and the spasmodic knotty contraction of muscles is characteristic of the disease. There is a very rapid shrinkage of the soft tissues of the body due to the enormous loss of fluid, and evidenced by falling in of the cheeks, sunken eyes, shrivelled fingers and toes and general emaciation. There is usually complete suppression of urine and bile. Respirations are rapid and shallow. The body surface is cold and covered with a clammy sweat. The surface temperature falls 4 or 5 degrees below normal, but the rectal temperature may show 38 to 40° C. The pulse becomes rapid, feeble, fluttering and then imperceptible at the wrist. Cyanosis is marked. The face and especially the finger and toe nails assuming a bluish tint. The voice is reduced to a whisper. These symptoms are sometimes followed by complete collapse and death. This may occur at any time in the first 24 hours. In other cases vomiting and purging ceases by adequate treatment and sometimes spontaneously; the body heat returns; the pulse becomes perceptible, then stronger again; the secretion of urine begins to be reestablished and the patient is on the road

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to recovery. Other cases which do not die in collapse react slowly and pass into a condition which many writers have described as cholera typhoid. In this state there is some fever, the shrunken tissues fill out, and the urinary secretion returns. The stools assume a pea soup character and are very offensive. The urinary secretion returns but the urine is scanty, albuminous and contains many casts. From this vomit the biliary secretion may return and the stools approach the normal type, the albumen and casts diminish and the quantity of urine increase, the patient progressing to convalescence. On the other hand from this point if the urine fails to improve then any of the symptoms and conditions due to uraemia may be expected, including convulsions, coma and death.

TREATMENT.

The treatment of Asiatic Cholera may be considered under two heads, viz.—Treatment of collapse and treatment of uraemia.

Treatment of collapse.—The best treatment for collapse is the intravenous injection of salt solution. When feasible no other treatment of this condition is justifiable. The apparatus and technique are simple. Rogers recommended the use of hypertonic salt solution on the ground that the use of this solution replaced not only fluid but lost salts of the blood. The writer working with Dr. A. W. Sellards in Manila tested isotonic (normal salt solution) hypotonic and hypertonic solution. The results showed equally beneficial effects from all three, in so far as judgment could be rendered from a series of about one hundred cases.

The crying need of the patient is for fluid. This is needed primarily in the blood path. To inject into any other part of the body is a waste of very valuable time. Peritoneal or subcutaneous injections should only be employed when the number of patients, lack of time, or some other good reason prevents intravenous injection.

Salt solution should be prepared and sterilized in 1 and 2 liter bottles. When needed it should be heated in a water bath to 43-45 C. A doubly perforated cork, one with long glass tube to admit air and a short glass tube to which a sufficient length of rubber tubing is attached should be sterilized and kept in weak carbolic solution until needed. The following procedure is followed at San Lazaro Hospital in Manila:

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The skin is cleansed over the internal saphenous vein above the internal malleolus, or one of the veins at the bend of the elbow. A small incision is made over the vein. The vein is dissected from the tissues and a grooved director passed under it. Two ligatures are placed ½ inch apart and the distal one tied, a small incision is made in the vein between the ligatures. A medium-sized canula is attached to the rubber tube of the transfusion apparatus and inserted into the vein after having allowed the fluid to flow through the canula a few seconds. The bottle containing the salt solution described above should be reversed and hung about 4 feet above the bed, and the flow should not be too rapid, taking 20 to 30 minutes to inject 1,500 to 2,000 c. c. of fluid. The amount injected depends upon the condition of the patient. Usually 1,500 c. c. will be necessary and sometimes more to restore the fallen blood pressure and bring back the body heat. If collapse again supervenes within a few hours the injection should be repeated using one of the other ankle or forearm veins. Rogers very often leaves the canula tied in the vein for the use of a second injection. In Manila usually a different vein was used each time until both ankles and both elbows were bandaged. When a fifth injection is necessary the operation is similar to the first except that the incision is made ½ inch to 1 inch higher up as described by Nicolls and Andrews. After the operation the proximal ligature is tied and an antiseptic pad and bandage applied.

The effect of intravenous injections in cholera is startling. It seems like resurrection, the body heat returns, the pulse becomes perceptible, then full and strong. If symptoms of collapse again appear the operation must be repeated. Hot saline enemata have a good effect in washing out the lower bowel. The most important indication in the stage of collapse next to supplying the lost fluid, is to conserve and maintain the body heat by hot bricks, hot-water bottles, blankets, etc. No nourishment should be given for the first 36 hours, nothing but cracked ice or small quantities of water. Rice water, broths or coffee may be given in small quantities after the 2nd day; as convalescence begins soft diet may be gradually introduced.

Treatment of the uremia.—Treatment of the *uremia* or the so-called "cholera-typhoid" is the classical treatment of *uremia* as described in any text-book. It has been suggested that this fatal complication was due to an acidosis and on this theory the

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writer with Dr. A. W. Sellards of Manila in December, 1909, substituted for the salt solution used intravenously a 2% solution of sodium bicarbonate. The beneficial effects of fluid during cholera were apparently identical with those noted after the ordinary salt solutions, and in addition the incidence of *uremia* following as a complication was reduced. The number of cases was not large enough to draw positive conclusions and further experimentation is necessary.

THE BACTERIOLOGIC DIAGNOSIS OF CHOLERA.

In combating cholera our sheet anchor is the exact bacteriologic diagnosis. Diagnosis by means of the agglutination reaction and Pfeiffers phenomenon, permits us to differentiate cholera from toxic gastro-enteritis, ptomaine poisoning, and other diseases resembling cholera. It further enables us to diagnose Asiatic cholera when the classical symptoms are absent or masked or in those cases in which the patient presents no symptoms whatever (bacillus carriers). In other words, this exact diagnosis obviates the necessity of fighting in the dark, and enables us to concentrate our efforts upon finding foci of infection and rendering them inocuous.

The picture of so-called "Cholera nostras," which is probably not due to one, but to many different causes and the picture of fish, meat, cheese, or ice cream poisoning, may be very like cholera with vomiting, diarrhoea, subnormal temperature, loss of pulse, suppression of urine and collapse. The symptoms given are common to the action of various toxic substances upon the human organism. To attempt differentiation by clinical symptoms alone is always uncertain and in some cases quite impossible. By the bacteriologic methods now in use we have a certain means of differentiation, which gives us results within a few hours.

The material for the diagnosis of Asiatic cholera is obtained from the stools of the sick or suspected one, or from the intestinal contents of the dead. If a normal stool cannot be obtained, as in the case of a healthy "contact" or person living in the house with a cholera patient, a cathartic such as sulphate of magnesia may be administered. Sometimes with a patient not seriously ill but whose bowels have been moving freely, it is inadvisable to give cathartics, and yet an annoying delay may occur in waiting for a specimen. In such circumstances pass the largest size

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catheter or a stomach tube high up in the large bowel. Upon withdrawal the "eye" of the tube will be plugged with mucous scraped from the lining of the bowel, and this can be transferred to media by means of a platinum loop. It must be remembered that this method is only reliable when the patient's bowels have been moving freely just preceding the taking of the specimen. In fatal cases the specimen should be taken from the small intestine at autopsy, or if complete autopsy is not possible or advisable an incision may be made in the abdomen and a loop of small intestine drawn out of the abdominal cavity. A section 4 or 5 inches in length should be cut out between ligatures, and brought or sent to the laboratory.

First smears should be made from the faecal material obtained. Flakes of mucous should be selected and smeared upon clean glass slides. After drying in the air, and fixing by passing the slide rapidly 3 or 4 times through a gas-flame stain for a half minute with carbolfuchsin solution, diluted by the addition of 9 times its bulk of water. In cases with typical symptoms, the presence in the stained preparation of a great predominance of vibrios over other organisms is very suggestive of cholera, and the practised observer will often be willing to risk a diagnosis upon this alone. It is a risk, however, and an unnecessary risk as verification by agglutination is not difficult and should be carried out in all cases.

It must be borne in mind that in normal and diarrhoeal feces fine spirilla are found which although they do not greatly resemble cholera organisms, being longer, narrower and less-curved, may cause confusion. There are also the so-called cholera like vibrios which are morphologically and culturally indistinguishable from cholera. Their differentiation being possible only by the agglutination and other biologic tests. It is not known if these are common in America, but they are frequently met with in the tropics and the writer isolated twenty different strains of these in Manila from intestinal contents, shallow contaminated wells and other sources.

Inoculation of Cholera Peptone Media.—From three to six tubes of cholera peptone solution (see appendix) should be inoculated each with a loopful of the faecal material, select a flake of mucous if possible from the most liquid part of the stool, also add 1 c. c. of faecal material to a flask containing 50 c. c. of peptone solution. Place these tubes and flask in the incubator 37° C., or

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if no incubator is available, place in a warm room and try to maintain the temperature between 27° and 37°. Examine the tubes after 3, 6, 12 and 24 hours by making stained smears from the surface. If a thick pellicle forms in this time it is well to avoid it, as other organisms will probably predominate therein, by tilting the tube very carefully toward the horizontal, the pellicle moves away from the lower side of the tube and a loopful may be secured without touching the pellicle from the intensely cloudy zone just below the surface of the liquid. If vibrios are scarce or absent in the smears from the peptone tubes they may be abundant in the 50 c. c. flask of peptone. If the three-hour examination is negative the tubes and flasks should be replaced in the thermostat to be examined again after a growth of 12 and 24 hours. It is to be remembered that the cholera peptone solution is an elective medium and favors the growth of vibrios, especially in the first 8 hours of growth. If vibrios are few in the first peptone after three hours it is wise to make a second peptone from the first, as well as to permit the original peptone to incubate longer.

Agar plates.—The alkaline cholera agar (see appendix) should be used. For convenient use it should be melted and about 15 c. c. placed in each tube and allowed to solidify with the tube in a slanting position. The plates are made by pouring the contents of one tube, melted in a water bath, into each petri dish. The surface of the agar plate must be dry, and after solidification has taken place; this is best effected by placing them for 5 minutes in a warming oven at 60° C., or remove the cover and place with agar surface downward in the thermostat at 37° C. for one hour.

Inoculation of the agar plates should be made direct from the faecal material and as a matter of course from the surface of any peptone of tube, from which the stained specimen showed vibrios present. Inoculation of the plates may be made with a bent glass rod, a swab, or with the ordinary platinum loop.

The amount of material used should be one loop, and 3 plates should be successively streaked with the same loop without renewing the infected material. In this way isolated colonies are usually obtained in the first plate and always in the second or third.

It is sometimes advisable in making plates direct from stools to add one loop of the faecal material to 1 c. c. of peptone or bouillon and streak the agar plates from the dilution.

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It will be noted that no mention is made of gelatine media or of the growth of vibrios thereon. Gelatine occupies considerable space in text-books upon cholera, but has been abandoned by all practical workers and now possesses little more than historic interest or value.

Dieudonnè's elective blood agar media (see appendix) was tested by the writer with fresh cholera stools in Manila. It greatly inhibits the growth of colon and other intestinal bacteria, bacteria also of the common air-borne yeasts and molds. Cholera and some other vibrios grow luxuriantly thereon, and the colonies may attain microscopic size earlier than upon the ordinary media. At first glance it seems an ideal media, but its importance is lessened by the fact that there is no difficulty in isolating cholera in pure culture with the ordinary cholera peptone and agar now in use.

The agglutination test.—The agar plates are placed in the thermostat at 37°, or kept in a warm room as near that temperature as may be possible.

Within 18 hours the cholera colonies appear easily distinguishable from those of colon-like organisms, by the qualities described above. Given the vibrio colony it is then only necessary to apply the serum-agglutination test to ascertain if the vibrio is a cholera vibrio or a non-specific vibrio which resembles it. There may be many isolated colonies upon the plate, and there is always the possibility of cholera-vibrio and non-cholera vibrios co-existing; therefore, it is often necessary to test many colonies. For routine diagnostic work the following procedure will be found to save time and is the one employed in Manila.

A dilution of 1 to 200 of an agglutinating cholera serum (see appendix) having a titer not less than 1-1000 should be used. A drop of this dilution should be placed at each of three equi-distant points upon a clean glass slide. These drops upon the slide are numbered 1, 2 and 3. A portion of colonies correspondingly numbered is transferred from the plates to the drops of diluted serum by means of a straight pointed platinum wire. The diffuse cloudiness effected in the drops of serum remains permanent in the case of non-cholera vibrios, but if the vibrio be cholera the familiar phenomenon of agglutination is macroscopically apparent. The diffuse cloudiness gives place within a few minutes to a clear fluid containing numerous floccules in suspension.

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The droplets soon dry in the air and may be fixed and stained when the characteristic vibrios may be seen stained in clumps.

The agglutination phenomenon may be observed microscopically by the hanging drop method inoculating a drop of diluted serum from a cholera colony in the same manner as described above. For diagnostic purposes the macroscopic agglutination test is sufficient. Quarantine macroscopic agglutination tests may be made by the following manner.

In small test tubes (2 c.c.) ½ c.c. of dilution of serum varying from 1 to 10 to 1 to 4,000 or up to the limit of serum's agglutinating power. To this quantity of serum ½ c. c. of an emulsion of the vibrio to be tested is added, and the results noted after one hour in the thermostat at 37° C. and after an additional 2 hours at room temperature. A smooth emulsion is best prepared by adding to cultures 18 hours old on agar slants, 5 to 8 c. c. of sterile salt solution. With young cultures very little shaking is necessary and it is never necessary to scrape off the culture, a procedure to be avoided. The test tube racks should be painted black to make the reading of results more easy. In the pipette work of delivering quantities (½ c. c.) of virulent culture in each tube, it is advisable to use cotton plugs in the upper end of the pipettes and to employ a rubber nursing bottle teat to furnish the necessary power of suction and expulsion. Of course by adding the equal quantity of culture to the serum dilution the amount of dilution is multiplied by 2. Thus 1 to 50 becomes 1 to 100, and 1 to 500 becomes 1 to 1,000. Some workers add a loopful of culture to 1 c. c. of the serum dilution, rubbing it up slowly on the side of the test tube. It takes more care and time to effect a smooth suspension in this way, but the readings are made without change in the dilution—1 to 50 remains 1 to 50, etc.

Other diagnostic tests.—For the description of the technique of the well-known Pfeiffer phenomenon, the reader is referred to any standard work upon bacteriology. It is a very valuable corroborative procedure, but unnecessary for diagnostic purposes if the serum agglutination test can be applied. Its proper demonstration necessitates the use of a well equipped laboratory.

Technique for the testing of the hæmotoxic or hæmolytic properties of vibrios and for making experiments with vibrios in the binding of complement are omitted.' Scores of interesting experiments have been performed in these lines by Kolle, Meiniske, Schumacher, Mühlens, von Raven, Schütze, Weil,

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Markl, deBeschi, Kon, Schotmuller, Kruas, Pribram, Ruffer, Göttschlich and many others, but nothing to alter the demonstration of the absolute specificity of the agglutination reaction as first demonstrated beyond question by the classical work of Kolle. So that in spite of the interesting light thrown upon the biologic properties of vibrios, the discussion of these almost endless experiments is beyond the scope of a practical paper of this kind and the interested reader may consult the original articles. Kolle and his co-workers proved the absolute specificity of agglutinating sera. He proved that serum prepared from a cholera vibrio agglutinated all cholera vibrios and had no more action on non-cholera vibrios than normal serum in the same dilution. Also that an agglutinating serum prepared from a non-cholera vibrio agglutinated that vibrio only, and had no effect whatever upon a true cholera vibrio. The writer in Manila was able to corroborate this with a large number of freshly isolated cultures of both cholera and non-cholera vibrios.

The use of the patient's serum tested against a known cholera organism for specific agglutinin or bacteriolysin is uncertain and unreliable as a means of diagnosis, consequently is not discussed here. The reader is referred to an interesting article by Svenson on this subject (Zeitschrift für Hygiene V. 64, 1909).

Discussion of the famous El Tor vibrio is avoided also. The literature on this one phase is enormous and the end is not yet. Suffice it to say that the concensus of opinion places the El Tor vibrios as true cholera vibrios, somewhat atypical in possessing toxic and haemolytic properties rarely found in cholera vibrios. However, Kolle, Meinicke and others have shown that these properties are found occasionally in other cholera vibrios and in view of the fact that these El Tor vibrios give the agglutination reaction and the Pfeiffers phenomenon with cholera sera, they must be considered cholera vibrios. The persons carrying them without exhibiting any symptoms of cholera must be regarded as carriers, or as Pfeiffer has suggested the vibrios for some reason may have lost their pathogenicity for man.

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APPENDIX.

PREPARATION OF CHOLERA MEDIA.

I.

Nutriment Bouillon.

One-half kilogram beef, free from fat, cut in very small pieces and allowed to stand with one liter of water 24 hours in the ice chest or for one hour in the incubator at 37° C. Press through cheesecloth. Add water up to one liter, add 10 grams Witte's peptone and five grams salt. Cook for one-half hour. Make alkaline with solution of caustic soda. Heat again three-fourths hour and filter.

II.

Cholera Agar.

Take one liter of nutrient bouillon (No. 1) and add 30 grams agar, dissolve by heat and alkalinize with caustic soda solution. To reach a desirable grade of alkalinity in cholera media, add 3 c. c. of a 10% caustic soda solutioin to each 100 c. c. of media which is neutral to litmus. The agar should be sterilized in tubes containing 15 c. c. each.

III.

Cholera Peptone Solution.

Peptone (Chapoteau or Witte)	10.
Salt	10.
Potassium nitrate	0.1
Sodium carbonate	0.2
Distilled water	1000.

Dissolve by heat, filter and sterilize in tubes containing 15 c. c. and flasks containing 50 c. c. for use.

IV.

Alkaline Blood Agar Medium of Dieudonnè.

Defibrinated oxblood	30.
Normal solution of caustic potash	30.
Cholera agar (No. II)	140.

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Add the caustic potash solution to the oxblood, and add the ıcted agar. Sterilize for 1 hour at 100° C. and use about 15-20 c. c. for each plate.

V.

To Prepare an Agglutinating Cholera Serum.

Use 18-hour cultures of a known cholera vibrio upon agar, inject in the ear vein of a rabbit a suspension of the organism in salt solution which has been heated for one hour at 60°.

1st day	1 loop.
7th day	3 loops.
14th day	5 loops.
21st day	1 slant (about 8 loops.)

The fourth injection may be given intraperitoneally and the rabbit is ready to bleed on the twenty-eighth day. This procedure usually gives a serum with a titer of 1 to 4,000.

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CONTAGIOUS AND INFECTIOUS DISEASES*

By Arthur N. Collins, A. B., M. D., 1st Lieut. and Asst. Surg., Second Regiment, Minn. N. G.

WE should never tire of discussing sanitary subjects in military circles inasmuch as upon the sanitary aspect of military life hinges a vast amount of the well-being of the army. We have before us for consideration a very important subject from a sanitary standpoint. Lest confusion arise as we proceed, let us at the outset understand each other on the question of terminology. All of these diseases are infectious, whereas some of them may be contagious. Therefore we shall speak in this discussion of infectious diseases in a primary sense and utilize the word contagious only where it may become necessary.

In order to have a high standard, physically, among the men composing our fighting forces we must have some sort of an ideal for comparison. An ideal fighting force from a physical standpoint should be made up of men in perfect physical condition to begin with. Our further aim would then be to eliminate disease entirely and thereby maintain the physical standard as high as it was at the outset. The only physical deterioration then to reckon with would be from ordinary wear and tear of physical exertion, and disability or death from extraneous causes. But even at best we must fall far short of this ideal. All diseases are not yet considered infectious. If it were in our power to eliminate all infectious diseases we should still have with us many which are not now regarded as such. We shall consider here, however, a group included in the infectious class.

Where a large aggregation of people exists, infectious diseases may flourish, the conditions being favorable. The conditions which favor disease we may look upon as unfavorable to the individual. Conditions established to prevent the incidence and spread of disease are unfavorable to the disease itself and favorable alike to the individual and the body-aggregate of which he is a unit. We may therefore discuss the subject in hand under

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two sub-headings; (1) to know something of the infectious diseases themselves; (2) to know everything possible of the agencies to be employed in combating them. It is well to know the enemy and his habits, so let us enumerate some of these diseases, for it has been said: "An army has two foes—bacilli and men—and of these the former is far the more dangerous."

In reviewing the history of past wars we are confronted with the following list of diseases causing embarrassment to the fighting power of armies: 1, Worms; 2, Typhoid; 3, Typhus; 4, Dysentery; 5, Malaria; 6, Jigger ulcers; 7, Itch; 8, Ulcers Cornea; 9, Lead poisoning; 10, Smallpox; 11, Remittent fever; 12, Diarrhoea; 13, Opthalmia; 14, Plague; 15, Gangrene; 16, Cholera; 17, Measles; 18, Pneumonia; 19, Relapsing fever; 20, Scurvy; 21, Yellow fever; 22, Bilharzia.

At least sixteen of the foregoing list of twenty-two are infectious. In the very recent wars the following diseases have been the most troublesome: Typhoid, dysentery, malaria, yellow-fever, and bilharzia.

An elaborate discussion of each of the infectious diseases (some fifty or more) which are capable of causing great havoc among troops would require more time and space than we are allotted in this paper, therefore, we shall take for brief discussion the five diseases in the list just quoted from recent wars and use them as examples of a class. But before we proceed further let us consider mortality statistics for a moment.

The death rate in our army from all causes, tabulated from 1905 to 1909, is as follows:

1905.....	6.28	per 1,000
1906.....	6.11	per 1,000
1907.....	5.81	per 1,000
1908.....	6.13	per 1,000
1909.....	4.01	per 1,000

During peace time therefore there is to be seen a fairly consistent decrease in the death rate.

During the whole Russo-Japanese War 270,000 sick were admitted to the hospitals on the Russian side; 18,830 died. In the garrison at Vladivostock with an average strength of 10,384 officers and men during 1904 there were 3,664 cases in the hospital and 64 deaths. Thirty-eight and four-tenths per cent of

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the deaths were due to typhoid; 67.2% of the deaths were due to typhoid and lung diseases; infectious diseases.

In the wars of the last fifty years typhoid fever has played an important role. In the Civil War there were in the northern army 75,361 cases with 27,056 deaths among the white troops and 4,096 cases with 2,280 deaths among the colored troops.

In the Franco-Prussian War 60% of the total mortality was from this disease.

In the Spanish-American War there were 20,738 cases, with 1,580 deaths.

In the South African War the British Army had 31,118 cases with approximately 5,877 deaths.

In Porto Rico 90% of all the fever cases were typhoid, according to Nicholas Senn. Malaria and sunstroke caused most of the rest of the sickness.

More than 50% of the deaths among our American troops in the Philippines, according to recent statistical reports, are due to infectious diseases; and among the Philippine Scouts, 73%. In other words, if we could rule out all infectious diseases we should have only from 27% to 50% of disease to contend with among our troops compared with the conditions at the present time.

So then, if we have so formidable an enemy confronting us, giving us war in times of peace and no peace in times of war, it would seem we might with profit learn something of this enemy, his habits and habitat, method or methods of locomotion, etc., so that we may when occasion offers thwart him, if possible, in case he threatens to invade our forces.

Referring back to our table of five diseases which were chiefly prevalent during recent wars, we notice one very important point, i. e., their dependence in large measure upon water for transmission and perpetuation; typhoid, dysentery and bilharzia usually through the drinking-water supply, and the other two—malaria and yellow fever—by mosquitoes, the mosquitoes requiring water for their breeding places. The important practical point is this: in the case of typhoid, dysentery and bilharzia the purity of the water supply is of distinct importance; in the case of either malaria or yellow fever the mosquitoes must not be allowed to come in contact with the men nor should the mosquito be allowed to come in contact with a yellow-fever patient.

Referring to our first list of diseases which have caused much

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loss of life in past wars we see that over 33 1-3 per cent of them are water borne infectious diseases.

Proceeding now to a brief description of the infectious diseases we have chosen as examples of the class.

Typhoid fever is a disease due to the bacillus typhosis; it is a general infection with this organism and is characterized especially by involvement of the lymph tissue and intestinal ulceration; also by enlargement of the spleen, etc. Of its spread much can be said concerning the various modes, such as through water, food, flies, dust, soil, air, direct infection, etc., but in a few words and to the point this much can be said; the bacilli come from another patient. We know further that he discharges the bacilli with his excreta. These bacilli find their way to the mouth of some one else unless they are destroyed. These are facts, not mere theories. Why then is this destruction of the bacilli in the excreta not carried out? Because it is a very difficult or complicated task? No, for it is not. Typhoid fever is most often due to carelessness on the part of someone.

Dysentery is a disease due to the bacillus dysenteriae—though there is a dysentery due to an entirely different organism—the amoeba. We will speak for the present of the first mentioned. It is a disease characterized by diarrhoea and colic, prostration, slimy and bloody stools with tenesmus (or straining). The mortality runs from 15% to 26.8%. The bacilli come from another patient, are discharged with the excreta and find their way to the mouth of some one else unless they are destroyed. Carelessness plays an important part here also in the dissemination of the disease.

Amoebic dysentery is a disease due to a unicellular parasite called the amoeba. The infection is obtained chiefly through polluted drinking water. The disease is characterized by intestinal disturbances consisting chiefly of intermittent attacks of diarrhoea and constipation and slime and blood in the stools. The parasites are discharged with the excreta. The disease is spread by drinking water which has been contaminated by these parasites. Other methods of distribution are possible, such as eating of foods (lettuce, etc.), which may have been washed in or otherwise come in contact with polluted water. The mortality from this disease varies according to several reports from 4.5% to 38.5%. There is another side to the story, however, and that refers to the number of chronic invalids who may perhaps not

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die but who are incapacitated. Such diseases as this leave our fighting forces in a moth-eaten condition. So we see here is a disease chiefly water-borne, and the water has been consumed without proper preparation.

Malaria is a disease of a specific infectious nature due to infection of the red blood corpuscle by the plasmodium malariae. The disease is characterized by chills and fever occurring periodically, that is to say at intervals of a certain number of days according to the type of the disease affecting the patient. We have no considerable mortality to deal with in this disease. There is, however, considerable disability in the aggregate. The ten posts in the United States having the highest numbers of malarial cases give in the aggregate 46,316 admissions in 1908 and 57,124 in 1909. All malarial infections are spread by mosquitoes of a certain genus called anopheles and so far as known at the present time this is the only means of transmission. These malarial fevers are not infectious from patient to patient except by means of the mosquito as a carrier.

Yellow fever is an acute, specific, infectious but non-contagious disease caused by an infective organism not yet definitely determined. The chief characteristics of the disease are: fever occurring in one or two paroxysms, jaundice, albumen in the urine, hemorrhages from the mucus membranes and in severe cases, black vomit. This disease is spread from individual to individual by the bite of a mosqiuto—a different one from that carrying malaria. This particular mosquito is known as the stegomyia fasciata. The mosquito must bite a yellow fever patient during the first three days of the latter's disease, but the bite of this same mosquito is harmless to another person until at least twelve days have elapsed. It is generally admitted that this is the only method of spread—namely through the bite of the stegomyia fasciata. The mortality from this disease in the past has reached fearful figures at times. But let us pass from the unpleasant to the more pleasant aspect of the situation. In the past about 36,000 deaths from this disease are recorded for the city of Havana. Today I quote from the last report of the Surgeon General on health conditions in Cuba: "No case of yellow fever occurred (during the year 1909) as that disease had been extinguished on the island." This, in truth, sounds encouraging and it is a splendid evidence of the excellent work—at the expense of many valuable lives—that has been done in determi-

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nating the facts above and many others of great interest which we have not space to set down.

The most formidable of our quintette of diseases have now been rather summarily disposed of. The least formidable is bilharzia. This is a parasitic blood disease caused by either the Asiatic or African blood-fluke. The most prominent characteristic of the disease is bloody urine. The method of infection has not been definitely determined. It is probably polluted water. A great deal of scientific work is being done with this disease. Death from the disease itself seldom occurs. Complicated cases may be fatal. In mild cases there may be little inconvenience. In more severe cases considerable disability may be present.

The writer's object in thus taking up these individual diseases chosen from a long list of those which have harrowed the armies of the past was: (1) to bring before the members of this association the salient features of a few troublesome infectious diseases and (2) to attempt to draw analogies sufficient to enable the officers to see for themselves the value of certain scientific discoveries, the value of their practical application and the value of grasping the principles involved in order that the discussion which is to follow may not seem dogmatic.

To quote an eminent present-day writer, Dr. Lawrence Flick: "The cure (of disease) is a more inviting field than the prevention but is less profitable to society and perhaps even to humanity. Making well a person who is sick is much more dramatic than preventing a person from getting sick and is much more fascinating to the average mind."

To quote from Osler: "The all important source of infectious disease is the sick man—the individual who has acquired the disease before coming into our midst." Osler was speaking of tuberculosis when he framed this statement, but we can see the value of it when applied to many of the other infectious diseases. The old household saying: "An ounce of prevention is worth a pound of cure" is applicable when we consider the vast store of human life which is entrusted to us in authority. Within the past year and within our native State a congress for the conservation of natural resources was in session. Is it not time steps were taken toward the conservation of human lives by preventing preventable diseases where it is possible?

Let us proceed to a consideration of some of the difficulties encountered in the past in the handling of infectious diseases,

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the methods used to surmount these difficulties, etc., and see if we cannot draw a few valuable lessons for our guidance in the future.

Before the days of scientific understanding of the diseases which have caused epidemics among soldiers, some very interesting observations were made. History repeats itself in the fact that fevers are on the wane when bodies of troops are on the march. The standing camp is the place of sickness. In the standing camp the focus of disease remains to encourage spread while on the march this focus of infection is left behind in a great number of instances.

In 1753 Pringle said: "Move camp and leave bloody flux behind."

In Sherman's march of about six months' duration, measles, pneumonia and small-pox caused the few cases of illness which occurred in his forces. The sick were only 2% to 4% in that time.

In the Crimea in 1854 until sanitary requirements were attended to, the death rate reached 65%. The chief diseases encountered were typhus, relapsing fever, dysentery, typhoid, scurvy, cholera and hospital gangrene.

In Santiago certain barracks were a notable point of yellow fever infection during Spanish times. Cases began to develop among our troops who occupied these barracks in June, 1899. The troops were transferred to a camp one and one-half miles away from the city after a more or less complete disinfection. A few cases continued to develop during the period of incubation and after five days the camp was removed and the disease practically disappeared. It is worthy of note that Morro Castle, which maintained a strict quarantine throughout the season, did not have a single case.

In the report on the Russian Medical and Sanitary Features of the Russo-Japanese War, Raymond Spear, Surgeon, U. S. N., says: "Line officers are placed in command of hospital trains and general hospitals. At one time they were in command of field hospitals but war conditions necessitated putting the senior medical officer in command. Great attention was paid to the water on the part of the medical men, but despite all precautions and warnings the soldiers did the same as all soldiers before them have done when they were on marches away from their usual camp surroundings, in that they quenched their thirst

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whenever opportunities presented themselves, regardless of the dangers of infected water. If officers, while they are on retreat where they have lost everything, describe their paramount desire to have just one drink of something, no matter what, it is little wonder that the less educated soldiers drink any water under the same conditions. It is a difficult problem to supply all soldiers under all war conditions with non-infected water, but it is one that should be solved in every camp if the health of the troops is to be properly guarded. In Manchuria the importance of supplying boiled water for the troops was recognized by the medical authorities. For this purpose large numbers of movable apparatus, the principle of which was the Bouro system, were supplied as a part of the regular equipment of the troops. The Bouro-system apparatus resembles a movable kitchen. Water by this system is quickly boiled. It usually takes but thirteen minutes after lighting the fire to produce twelve buckets of boiled water. The heated water passes through a water-cooled pipe, and it imparts its heat to the cooled water surrounding it. The system is a very good one and by its use large quantities of palatable water are made easily available. The field laboratories were each supplied with a case of drugs with directions for their use for the clarification and chemical purification of water. As a matter of fact these cases were seldom if ever used. The method of boiling the water before using was employed to the exclusion of others. If the water was muddy, it was often filtered before this procedure. For filtering water almost every common filter was met with in various places. Berkfelt and Pasteur filters were the favorite ones in the hospitals. In the field a canvas bag, in which asbestos was used as a filtering material, seemed to be the most popular. The asbestos in these filters could be removed and disinfected by heating and replaced at regular intervals.

"That typhoid fever did not spread more was due to the fact that a great deal of the water used by the troops was boiled and consumed in the form of tea. Russians are great tea drinkers. The number of typhoid cases could have been materially reduced by an early recognition of the disease in the camps, by constructing the sinks and treating them in a hygienic manner, and by regarding all fecal and urinary material as dangerous and infected, by immediately moving camps in which cases of typhoid developed to new sites whenever practicable, by screening all kitchens

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and places where the bread was stored to keep it from flies and by insisting on the troops drinking boiled water at all times. It would have been better to consider typhoid fever as a contagious disease and to have kept all cases isolated.

"In Manchuria flies became prevalent in June and with the warm weather and rain they increased until the cold nights in August. Doctor Koslosky was of the opinion that dysentery was primarily distributed by flies; secondarily, the infection was by drink water. This view seems to be the correct one. During the summer months the flies had many opportunities to distribute from the sinks the germs that produced dysentery. In Vladivostock, which was on the seacoast and colder, there were few flies. There in 1904 they had but seven cases of dysentery. In 1905 with a garrison of 66,000 men, but 36 cases occurred. The water supply of Vladivostock was less liable to infection than it was in the flatter Manchurian country * * * and conditions seem to point conclusively to the fly transmission as being the principal manner in which the disease was spread.

"At the field hospitals some of the sinks were covered. A great many sinks, however, showed a lack of knowledge in construction and a lack of appreciation of the danger that was sure to follow neglect to bury and disinfect all possible infected matter. The trenches were often shallow and only screened by brush; no barrier prevented flies from accumulating and distributing the germs of typhoid and dysentery. Lime was used in some of the trenches at times, but spasmodically. The trenches were not treated with earth at regular intervals, they were not burned out, nor were they always filled up when abandoned. The possibility of transference of disease by means of flies was often not appreciated. Official orders were issued by Medical Inspector Gabasivitch in regard to the placing and construction of sinks. His orders were often not carried out by the line officers. True it is that it was very difficult to make the Russian soldier change his lifelong habits and appreciate the importance of so doing."

In closing his report Doctor Spear makes the following observations: "The Russians and the Japanese each had a formidable camp disease to contend with. The Russians brought typhoid fever to their camps, and although a number of cases developed the whole army would have been prostrated and rendered useless by the disease if the sanitary measures had not

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been taken to check the disease and prevent its spread. On the other hand, the Japanese brought with them beri-beri a disease with about the same death rate as typhoid fever and a disease which incapacitates its victims absolutely for the performance of any military duties for months. We know more about typhoid than we do of beri-beri, but we also know that of the two diseases beri-beri is the easier to combat and eradicate by means of diet and proper sanitary measures. So the large number of cases of beri-beri that developed in the Japanese Army rather points to the fact that as hygienists the Japanese were not superior to the Russians."

"Doctor Herzog, of the Bureau of Government Laboratories, of Manila, P. I., who was detailed to study beri-beri in the Japanese Army, states in his report that between 75,000 and 80,000 cases of this disease were sent back to Japan from Manchuria during the last year of the war. There were in addition to these a number of severe cases that died in Manchuria. In other words, many thousand cases of a preventable disease developed in an army supplied with medical men that are considered good hygienists. These cases developed in the same territory that had been occupied by the Russian forces. The Japanese, either on account of natural immunity, diet, or because many of them had already had this disease when young, exclusive of sanitary measures, did not suffer to the extent their opponents did from typhoid fever, but nevertheless a number of cases of this disease did develop among their army.

"In the Russian army no cases of beri-beri developed, but 17,033 cases of typhoid fever, a preventable disease, did occur; but this total number of typhoid cases during the whole war is but one-fifth of the total number of cases of the principle preventable disease of the Japanese camps (beri-beri) that occurred during the last year of the war. The total number of cases of beri-beri that occurred in the Japanese army during the whole war will probably never be known by the public. So it is safe to conclude that the Japanese forces lost the services of many more men through preventable camp diseases than did the Russians.

"For the safeguarding of health of the largest army ever gathered together in the world's history, through sanitary and military hygienic measures, and for keeping it comparatively free from the many diseases that always threaten large assem-

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bled bodies of men, Russia must thank her medical men; for, though they were often hampered by the lack of authority, they showed that they were equal to the medical problems that constantly presented themselves and were practical to a degree in the performance of their duties."

We have had set before us therefore some very convincing facts and experiences, and they should receive our intense interest and consideration. What are the conditions among our own men? What should be our sanitary status were we plunged into war tomorrow? Would it be much better than the sanitary status in the Russian army? Granting that it were as good and our forces were exposed to one of these camp diseases we would stand to lose to the invisible army of bacteria a considerable number of our forces and thereby suffer a reduction in our defensive potency. But we may rightfully ask what lies at the bottom of this problem. The writer suggests ignorance as the answer and education as the antidote. I wish to quote from an able essay on a subject similar to our own by Major Frederick Smith: "The way to prevent disease in the army is to educate every officer and man in the army in the methods of avoiding disease. Let me not be misunderstood in this matter. I do not propose that every man in the army should be a doctor. I do think, however, that there is a little too much of the tendency to keep our knowledge to ourselves. This is a grave pity. * * * as experts we shall be as much required as ever. The cavalry officers are taught something about keeping horses in health, but this has not done away with the office of the veterinary surgeon. I have always found that both officers and men will take interest in sanitary recommendations if they know something about the reasons therefor.

"Actual sanitary measures must always be in control of the combatant officer—we (as medical officers) can but advise Training of officers and men in sanitation should not be confined to the regular army. All the State forces, volunteers and indeed everyone who is fitting himself to form part of an army or to be attached to an army in the field in any capacity should undergo the same training as far as possible.

"A very necessary thing is that we should practice in peace time the measures to be taken in war. If troops go out for even one day's exercise they ought to be made to behave as though that one day's program were a part of a real campaign. If the

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Commander-in-chief of a force knew and appreciated the practice of hygiene, he would on finding any part of his command encamped for no strategical or tactical reason in a bad hygienic situation, or on finding that a camp had been occupied for a great length of time (also for no strategical or tactical reason) call the commander of that force to account. Under such discipline commanders would very soon show lively interest in the sanitary work of the staff, medical and other officers serving under them."

The details of an educational campaign along sanitary lines I leave to abler men. Someone has said: "We see what we know." If this be true and we see only those things which we have been taught, men will not see danger in unsanitary conditions until they have been shown and have become thoroughly conversant with such danger.

A text or manual of Infectious Diseases and Sanitary Methods somewhat on the plan of the Manual of Arms might serve a valuable purpose in connection with lectures, demonstrations or other method of instruction. But whatever the plan to be followed let us remember that it is necessary that men learn these things during peace time at their home stations and during annual encampments if they are to be properly and effectively practiced when these men are called to war.

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MENTAL DISEASES IN THE MILITARY SERVICE WITH SPECIAL REFERENCE TO DEMENTIA PRAECOX.

By Capt. L. L. Smith, Medical Corps, U. S. A., Government Hospital for the Insane, Washington, D. C.

THE relative frequency of dementia praecox in the military service has resulted in special attention being given to this subject in the European Armies, especially in those of Germany and Austria.

As most armies, independently of whether the men are obtained by conscription or by recruiting methods, are made up mostly of young men, we would naturally expect to find that form of mental disorder predominating which belongs to the adolescent period, namely dementia praecox. This is by no means an exception in the United States Army, as study of the records of the Government Hospital for the Insane, will show.

During the period from July 1st, 1905, to July 1st, 1910, there were admitted to the Government Hospital for the Insane from the United States Army 520 mental cases. This included men on the active list, and former enlisted men of the regular army. The total number of insane officers was 27, and of enlisted men, 493. Among this number, there were 241 cases of dementia praecox, 6 being officers, and 235 being enlisted men. The percentage of dementia praecox among officers during this period was 22.22%; among enlisted men, 47.65%. This disproportion is due to the fact that among the enlisted personnel there are mostly young soldiers, while insane officers are drawn in greater proportion from individuals from the third to the sixth decades of life. Among the six cases occurring in officers, five or 83% were of the paranoid form; the sixth case was one of the catatonic variety and this patient was admitted at the age of 29 years, although his mental trouble had been gradually developing for a considerable time before admission.

The average age of the paranoid cases was 31.8 years. Although this number of cases among officers is not large enough to form any definite conclusion, yet in passing, it may be observed

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that when dementia praecox occurs in this class, it is more likely to be of the paranoid variety, that the symptoms are first noted at a later age than in the other varieties, although peculiarities of conduct may have existed for a number of years prior to the onset of the mental symptoms which were responsible for commitment here. Those patients developing paranoid praecox have succeeded in escaping "wreckage on the rocks of puberty," an expression frequently applied to the hebephrenics. The mental symptoms have become manifest at a later age, consequently the patients have had more time to develop in every way, to acquire an education and to fulfill all the requirements for a commission, as well as to have performed their duties more or less satisfactorily for a number of years before the development of pronounced mental symptoms. It is believed that men prone to develop the hebephrenic or catatonic variety will very seldom be able to proceed far enough in their career to acquire the education and other qualifications necessary to obtain a commission, and even if they should do so, they would not be able to remain for any length of time in the service, before a mental breakdown became manifest. The average number of years of service before mental symptoms became noticable, was in the paranoid variety about six years; the officer suffering with the catatonic form remained in the service about three years before his mental trouble became patent.

A study of the family history of those officers here considered, revealed defective heredity in 50% of the cases. It is generally conceded that heredity exerts a very powerful influence in the development of dementia praecox, especially the paranoid variety. The type of insanity in the antecedents of two of the cases was believed to have been dementia praecox. Kraepelin[1] found evidence of heredity influence in about 70% of his cases of dementia praecox coming from civil life, being more prominent in the paranoid, and equally less prominent in the hebephrenic and catatonic varieties. The causes other than heredity which are supposed to have had some influence as etiological factors in the development of the mental trouble in the six cases studied, were, in two cases tropical service, in one case heat exhaustion and malarial fever. Concerning the course of the disease in this group, there were no recoveries. Two were discharged as improved, one case unimproved, and three remained; in two of the latter, mental deterioration is well marked.

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TABLE NO. I.

Form of mental disease among 27 officers admitted to the Government Hospital for the Insane during the past 5 years:

Form of Mental Disease.	No. of Cases.	Percentage.
Dementia praecox.....	6	22.22
Psychoneurosis.....	5	18.50
Paresis.....	4	14.81
Toxic psychoses, including alcohol, etc.	4	14.81
Manic-depressive insanity.....	3	11.11
Dementia arteriosclerotica.....	2	7.4
Senile dementia.....	1	3.7
Paranoia.....	1	3.7
Hallucinosis, unclassified.....	1	3.7
Total.....	27	100.

From this table it is seen that dementia praecox has been the most frequent form of mental disease during this period. Psychoneurosis comes next in importance, forming 18.50% of the psychoses among officers. There were five cases in all, one being an anxiety neurosis, and four being cases of psychasthenia. Psychoneurosis was much more frequent among officers than among the enlisted men admitted during the same period. There were only four cases of paresis, forming 14.81% among the total admission of officers, which is a much lower percentage than that usually given as occurring among officers in European Armies.

There was only one case of true paranoia and this was of many years' standing, there being very little mental deterioration, except that incident to senile changes. It has been observed in a study of the histories that quite a few cases of paranoid praecox have been considered paranoia before admission here. White[2] states that "true paranoia is a rare disease, but that there are many combinations which are known as paranoid or paranoiac states, and that these states arise in the course of many mental disorders. The basis upon which true paranoia has been differentiated from the other conditions has often been on the absence of intellectual impairment; the deterioration, however, may not be very apparent in the early stages of dementia praecox, and time may be required to make the differentiation."

Drastich[3] of the Austrian Army studied during his term of

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service in the psychiatrical division of the Garrison Spitale No. 1 in Vienna, 1,566 mental cases, covering a period from May 1st 1894 to April 30th 1909, most of these cases being personally observed by him. The total number of insane officers was 619, and of the enlisted men 947. Among these there were 193 cases of dementia praecox; of this number 27 were offiecrs, and 156 enlisted men. The percentage of dementia praecox among officers was 4.36%, and among the enlisted men 17.53%. On the other hand, he found 365 cases of paresis, or 58.9% among the insane officers, also that among the younger officers, the paranoid form of dementia praecox prevailed, and so far as he had observed, led to rapidly developing mental deterioration. From these observations he showed that dementia praecox occurred relatively frequently in the army, and that the military surgeon should endeavor to give this form of insanity special study.

Only records of cases for the past five years have been studied because at that time a change at the Government Hospital for the Insane brought about a more modern classification of mental diseases and the records prior to that time do not lend themselves readily to comparative study. Hence my number of cases is small in comparison with those given by Drastich; however, it is seen in comparing the results of the latter observer with those here presented, that while paresis occurs much more frequently among officers of the Austrian Army, 58.9% as compared with 14.81% in the United States Army, the reverse is true of dementia praecox, it being 4.36% as compared with 22.22% in the United States Army.

The forms of mental disease in 493 cases of enlisted men in the United States Army admitted to this hospital for the past five years, are shown in table No. 2.

TABLE NO. 2.

Disease.	White.	Colored.	Total.	Percentage.
Infection-exhaustion psychosis, acute confusional type.	22	1	23	4.66
Toxic psychosis, exogenous; alcoholic (other than Korsakow's psychosis), etc.	56	2	58	12.21
Paranoia and paranoid states....	15	2	17	3.04
Manic-depressive psychosis.....	53	4	57	11.35
Dementia praecox.....	225	10	235	47.65
Paresis.....	25	7	32	6.49
Depressions, unclassified.....	2	1	3	0.6

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Disease	White.	Colored	Total	Per centage.
Psychoses associated with other diseases:				
Psychoneuroses—				
Epilepsy	13			
Hysteria	4	—	21	4.2
Neurasthenia	4			
Other nervous diseases—				
Polyneuritis (including Korsakow's psychosis).	1		1	0.2
Organic disease of the brain—				
Arteriosclerosis	11		11	2.2
Syphilis	3	1	4	0.8
Involutional melancholia	1		1	0.2
Senile dementia	8	1	9	1.8
Imbecility	5		5	1.0
Huntington's Chorea	2		2	0.4
Dementia, unclassified	1		1	0.2
Not insane	12	1	13	2.6
Total	463	30	493	100.

From Table No. 2 it is seen that there were 235 cases of dementia praecox, forming 47.65% of the total admissions. This is a relatively large number of cases, but it can be explained to a certain extent by the fact already mentioned, that our army is composed mostly of young men. Hence we would expect to find that form of psychosis most frequently in the adolescent period. Also it is believed that the exactitude of military regime brings to light more quickly conduct disorders which in many cases are passed unnoticed in civil life, owing to the greater laxity of custom, until more evident conflict with environment occurs. It has been found, in studying these cases, that the majority of them develops in recruits under the age of 25 years, and during the first two years of enlistment. It is therefore apparent that dementia praecox and reenlistments quantitatively exist in inverse ratio.

Stier[4] claims that mental diseases are higher in the armies of England and the United States than in those of continental Europe and that this is not due to the character of the military duty, but that in those countries where men are obtained by the method of recruiting, the applicants for enlistment do not compare favorably mentally and physically with those obtained by the method of conscription; also that the greater amount of al-

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coholism in the former armies may be an etiological factor in lessening the psychic and moral value of the soldiers thus addicted. The report of the Surgeon-General for the year 1910 shows that the admission rates for alcoholism and venereal diseases, taken together, are much higher in the United States Army than in any foreign army with which these rates were compared in the report.

From Table No. 2 it is seen that while dementia praecox shows a higher percentage among white troops, 48.6% as compared with 33.33% among colored troops, that paresis is about four times greater among the colored troops, being 23.33% as compared with 5.4%. These percentages are relative only. The annual report of the Manhattan State Hospital for the year ending September 30th 1908 shows that "among the men the number of cases diagnosed as general paralysis has steadily increased during the past three years, reaching during the present year the extraordinary figure of 23% of the total number of men admitted." It is thus seen that paresis occurs among the insane colored soldiers in about the same proportion as among the male civilian insane. Among 30 insane colored soldiers admitted here during the past five years, seven cases or 23.33% were found to be suffering from paresis, and this form of mental trouble came second in importance in the consideration of psychoses in this class. During the past two months there have been two colored soldiers admitted suffering from paresis who are not included in this list. The report of the Surgeon-General of the Army for 1910 shows that the admission rate for venereal disease was one-third higher among the colored race than the white, also that during the past five years, the colored troops showed a higher admission rate for syphilis than the white. As syphilis is regarded by most observers as being an important etiological factor in the development of paresis, the relatively higher percentage of paresis among the colored soldiers, may be thus explained.

The causes, mental and physical, given in the histories of 235 cases of dementia praecox in enlisted men, are as follows: Heredity 19; heat prostration 12; tropical service 10; alcohol 5; heredity and alcohol 5; stress of service 4; tuberculosis 3; environment 3; constitutional defect 2; typhoid fever 2; nostalgia 2; sun stroke 2; physical disease 2; worry over ailments 2; overstudy 1; hydrocephalus 1; rheumatism 1; malarial toxemia 1; confinement 1; psychopathic constitution 1; indeterminate 156;

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Total 235. Of the total number of praecox cases, 52 or about 22% were foreign born. This is much less than the percentage of foreign born among both civil and military insane admitted to this hospital since 1855, which Captain R. L. Richards in his study of mental cases here, showed to be 33 1/3%.

TABLE NO. 3.

The Nativity of the 52 Cases Foreign Born.

Austro-Hungary	11	Australia	1
Germany	10	Finland	1
Ireland	9	Sweden	1
Russia	8	Poland	1
England	3	Roumania	1
Holland	2	Switzerland	1
Canada	2		
Scotland	1	Total	52

This table shows that Austria, Germany, Ireland and Russia furnished 73% of the foreign born.

TABLE NO. 4.

Number of Cases Recovered, Improved, Etc.
1905-1910.

	Number.	Percentage.
Recovered	52	22.1
Improved	24	10.2
Unimproved	7	3.1
Died	6	2.5
Remaining	146	62.1
Total	235	100.

The percentage of recoveries appears to be larger than that given as occuring among civilian cases. According to Kraepelin, in about 8% of the hebephrenic cases, the symptoms of the disease entirely disappeared and the patients apparently recovered, but not all of these could be regarded as full recoveries, as some of them had a return of the symptoms in later life which lead to dementia. Among the catatonic variety, the percentage of recoveries given by the same author was 13%. In the paranoid form there were practically no recoveries.

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There were 5 non-commissioned officers among the 235 cases, as follows: 1 Sergeant of the Band, 1 Corporal of the Band, 1 Sergeant Coast Artillery, 1 Sergeant of the Infantry, 1 Corporal of the Infantry. It is very unusual to find in the history of the soldier who develops dementia praecox, that he has ever been a non-commissioned officer. If his type of praecox is of the hebephrenic or catatonic variety he is usually eliminated before he has been in the service long enough to reach that rank. If he does succeed in remaining long enough, as often occurs in the paranoid variety, his general conduct and service is, in most cases, not such as to warrant his being appointed to that grade.

Among Kraepelin's cases of dementia praecox in civil life, more than 5% of the male patients developed their disease while incarcerated in prisons and were not always in solitary confinement. He finds it difficult to explain the influence of confinement in these cases. It may be the withdrawal of the light, the fresh air, the exercise, the comfort, also the monotonous diet—all these may influence the question. It is not uncommon for this disease to develop during the confinement preceding the trial of the offender. Ball[5] contends that most of the cases of insanity found in prisions are not the result of confinement, but rather the cause of imprisonment, that insanity is largely responsible for criminal actions of the particular individuals.

Among the insane military prisoners of the praecox group, the majority of them became insane shortly after their imprisonment, and it is believed that their insanity was in most cases responsible for their coming in conflict with the military law. The offenses with which they were charged were mostly desertion, fraudulent enlistment, willful disobedience of orders, insubordination, and destruction of government property, rarely assault or crimes of a graver nature. Vigourous,[6] in writing of dementia praecox in the French Army, cited numerous instances where men suffering from hebephrenic dementia praecox, were enlisted in the Army without the nature of their trouble having been detected, and later have been heavily sentenced for various offences; also that the only way that this can be prevented will be the dissemination of greater knowledge of psychiatry among the military surgeons.

Among the total number of insane soldiers, there were 13 cases discharged as not insane. This does not mean that they had never been insane, but that they did not exhibit symptoms of a psy-

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chosis while under observation here. The history, of course, indicated that they had had some mental disturbance prior to admission. Three gave histories indicative of alcoholic psychoses, one case was suggestive of praecox, three were malingerers, probably individuals of psychopathic personality. Of the latter, one was a colored man who had simulated epileptic insanity; the same man after discharge from this hospital enlisted in another service and shortly after was returned here, having again simulated insanity, and in addition to this, "rigidity of the spine." All his symptoms disappeared the day following his readmission. Another of the malingerers simulated a form of insanity in which delusions of grandeur were prominent. The third malingerer had been a cocaine habitue. It is thus seen that malingering has been comparatively rare in the cases observed here. Of the remaining cases discharged as not insane, no definite diagnoses of the previous mental conditions were possible.

A personal study was made of 59 cases of dementia praecox, admitted since July 1st 1909. The varieties were as follows:

	Number.	Percentage.
Hebephrenic	38	64.4
Catatonic	13	22.
Paranoid	8	13.6
Total	59	100.

The average age of the patient suffering from the hebephrenic and catatonic varieties was 25 years, and of the paranoid variety 31.7 years.

TABLE NO. 5.

Groupings as to Age.

Years.	Number.	Percentage.
Under 20	2	3.4
Between 20 and 25	25	42.3
Between 25 and 30	19	32.2
Between 30 and 40	12	20.4
Over 40	1	1.7
Total	59	100.

From these tables it is seen that the hebephrenic and the catatonic varieties form 86.4% of the total number of cases, and the paranoid variety 13.6%; also that about 45% of all the prae-

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cox cases develop before the 25th year, and 78% before the 30th year. There were 8 cases, or 13.6% of the hebephrenic and catatonic varieties discharged as recovered, and none suffering from the paranoid variety were discharged. This low percentage is probably due to the fact that the remaining cases have not as yet been under observation for a sufficient length of time. A small number will probably be discharged as recovered in the future.

The factors having an etiological influence in the genesis of dementia praecox in 59 cases were as follows:

Heredity—insanity in ancestors.....	9 cases	15.2%
Chronic alcoholism in parents.....	12 cases	20 %
Family history of tuberculosis.....	9 cases	15.2%
Epilepsy in parents.....	2 cases	3.4%

The influence of heredity among the enlisted cases in only 15.2% in comparison with 50% among the officers, this disproportion probably being due to the meager family history obtainable in the former cases. It was impossible to accurately determine the type of insanity in the ancestors in those cases where a family history of same was obtainable. Besides insanity, there was obtainable a history of peculiar personality in individuals among the ancestors in a number of cases. Chronic alcoholism of the parents was noted in 12 cases, or 20%, and the majority of those having such ancestors were of the hebephrenic variety. Jelliffe's[7] observations on cases of well developed dementia praecox, which he has been able to follow for years, and whose parents were known to him, showed that three elements had been most emphatic in the ancestry,—"dementia praecox itself, alcohol, and abnormal personality; also that alcoholic parents have in his experience been most responsible for the hebephrenic, that in many instances, the alcoholism had been a symptom of profound neurasthenia or even a dementia praecox at an advanced age, to which it in turn has contributed, and established a vicious circle which left its imprint in heredity."

A family history of tuberculosis was found in nine cases or 15.2% but the number of cases may have been too small, from which to draw definite conclusions. Ziehen (8) says it cannot be excluded that tuberculosis in the antecedents is not more frequent among dementia praecox cases than among other forms of mental disease, and also in ancestors of sane individuals. He further

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says that the length of life of the dementia praecox cases is not shortened by the mental disease itself, but that it is a fact that many such cases succumb to tuberculosis. During the past five years there have been three cases of dementia praecox in patients who were also suffering from tuberculosis, and where the latter disease antedated the mental symptoms.

Stigmata of degeneration which were multiple in character were found in 61% of the praecox cases. The stigmata observed were malformations of the skull of various kinds, facial asymmetry, deformities of the palate, anomalies of the ears, dental irregularities, and other bodily stigmata of lesser importance. Becker (9) has observed that when multiple stigmata of degeneration are found, evidence of psychic degeneration can also be demonstrated.

In eleven cases, or 18%, there was found a history of previous attacks of insanity, and a small number gave a history of suspicious symptoms which existed prior to enlistment. The family and personal history cannot be obtained as fully in many cases of military insane as in the civilian class, whose relatives visit them more frequently, and from whom a fairly accurate account of the patient's past life can in many instances be obtained. A visit to the locality where the recruits resided prior to enlistment would probably reveal in many instances a history of peculiar acts or previous attacks of insanity, as well as evidence of an hereditary influence in a number of those cases where at present a negative family and personal history is obtained.

A study of the previous history of these cases shows that the majority of them were backward in their school work, rarely reaching the fifth grade, leaving school at the early age of 12 or 14 years, in many instances because they did not like to study, and preferred to go to work. A history of confirmed truancy was found in some cases, necessitating their commitment to a reform school for this and for other offenses. A number ran away from home and led a vagabond existence for some time. Some were regarded as seclusive, stupid, others irritable, impulsive, and not amenable to discipline. They changed occupations frequently, mostly on account of a roving disposition or being discharged for inefficiency. Many were easily discouraged, quitting their work because it was too hard or the weather was too cold, or they had received slight injuries.

Among the 59 cases, 6 or 10% were military convicts. Five

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had received dishonorable discharges for desertion and the sixth for willful disobedience of orders and resisting arrest. Further, there were six cases which were discharged from the army without honor on account of desertion. Twelve cases out of the 59, or 20% either received a dishonorable discharge, or discharge without honor. Six cases out of the 59, or about 10% had been inmates of reform schools. Three of these were military convicts. A few cases showed quite consistently a history of truancy in childhood, later desertion from the army or elopement from the hospital at the earliest opportunity.

Alcohol.—It is difficult to determine just how much importance should be attached to alcohol as an etiological factor in the production of dementia praecox; whether alcoholism should be considered a cause or a symptom of the disease. White states, "The role that alcohol plays in the production of psychoses, while admittedly an important one, is not at all well understood. Recent statistics conservedly interpreted, would indicate that about 12% of the cases of insane confined in public institutions of the United States are insane because of its influence, direct or indirect. When, however, the multitudinous ways in which alcohol may enter as a factor in the production of mental disease, and the far-reaching effects it produces, are considered, it is readily seen that no statistical study can solve the problem. * * * also that alcohol, like fever, may be said to be a measure of cerebral resistance, the unstable, predisposed individual becoming intoxicated more readily than the normal."

At the Manhattan State Hospital, as given in the report of the State Commission in Lunacy, State of New York, for year ending September 30, 1908, it is shown that there were 303 cases of dementia praecox or forms allied to dementia praecox, admitted during that year, forming about 20% of all admissions; also that in 6.6% of those cases, alcohol was regarded as having some influence as an etiological factor. In 59% of the cases of dementia praecox in my series, there was a history of alcoholic excesses in 21 cases, or 35.6%; six, or 10% were mixed dementia praecox and alcoholic cases. Most of them had been regarded as alcoholic psychoses before admission here, and in these the diagnosis often is very difficult to make at the onset as the symptoms of dementia praecox are masked by the alcoholic symptoms. Paton (10) tells us that "The intolerance for alcohol in cases of dementia praecox is marked, and that this symptom alone may be the means of

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bringing the patients to the hospitals for observation and treatment." Graeter (11) from his observations on dementia praecox and chronic alcoholism states that of eleven cases of dementia praecox complicated with alcoholism which came under his observation, the nature of the disease in the beginning was not recognized in a single case. He says that the reason of the diagnostic errors lies in the insufficient history of the cases, the obscuring of the praecox symptoms by those of alcoholism, and the fallacious conclusions of the practicing physicians.

In some cases time may be necessary to make the differentiation. The alcoholic symptoms which mask the dementia praecox in the beginning will to a large extent disappear on the withdrawal of the alcohol, and the symptoms of praecox in pure form will become manifest. It is thus seen that a diagnosis of alcoholic dementia will not apply to such cases, and that an injustice would be done the soldier in many instances if such a view of his case were taken. It is believed that dementia due to alcohol alone is rare in individuals under 30 years of age.

Environment.—It is believed to be of some importance as an exciting factor in a number of cases. However, we must seek for the true cause of the trouble in the abnormal mental condition of the soldier himself, rather than in conditions due to his surroundings. Among 235 cases of dementia praecox, environment was given as an exciting cause in three cases. Other conditions closely related to environment were given as follows: Tropical service in 10 cases, stress of service in 4, nostalgia in 2 cases. The recruit with a praecox make-up finds it much more difficult in most cases, to adjust himself to his environment in military life, than does the soldier who is mentally sound. Drastich tells us that there is no doubt that the military service is an irritative reagent for psychic anomalies. Hesnard (12) states that mental disease becomes apparent in psychopathic individuals much more quickly in a military environment than in civil life. As previously shown, dementia praecox among the colored troops was 33% compared with 48% among the white troops. This may be partly explained by the fact that it is believed that the average age of the colored soldier is greater than that of the white soldier; also that there are more re-enlistments among the colored troops; in other words, the majority of the colored soldiers are beyond the average age at which dementia praecox is likely to develop. It is also believed that the colored soldier

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adapts himself more readily to his environment, for various reasons, than does the white.

Among 235 cases of dementia praecox, heat exhaustion is given as an exciting factor in 12 cases, and preceded the onset of the mental symptoms in most cases by several months. These individuals appear to be more susceptible to the effects of heat and especially alcohol, in fact almost anything that crosses their path, than does the normal individual.

Early Symptoms.—These do not differ essentially from those observed in civilian cases, except as influenced by their environment in the military service. The onset in most cases is a very gradual one. Among the earliest manifestations, neurasthenia was given in 16 cases, or about 30% of those examined. There was a previous history of neurasthenoid symptoms in most cases which appeared weeks or months before the onset of the mental trouble. In some cases there was a history of neurasthenia or "nervous breakdown" a few years prior to enlistment. These individuals became easily fatigued, were indifferent to their duties, almost any military duty was regarded by them as too difficult to perform; they showed marked emotional disturbance, and became seclusive. In this condition they are apt to commit various minor offenses, and often begin indulging in alcohol to excess. They quit guard and are absent without leave, and in a number of cases desert. Kraepelin states that "among soldiers who are suffering from hebephrenic praecox, there are many transgressions against discipline, that they often are seized with uncontrollable laughter while in ranks, also that they very frequently desert the service." At the onset of the disease, when the neurasthenoid symptoms are often prominent, it may be impossible to make a positive diagnosis of dementia praecox, until the patient has been under observation for a certain length of time. The appearance of emotional indifference, lack of attention and retardation in both physical and mental spheres, mannerisms, etc., will indicate that the trouble is dementia praecox, rather than neurasthenia.

Epileptiform convulsions were noted in the history of one case prior to admission. The patient afterwards developed well marked symptoms of catatonic praecox. Urstein (13) observed among 180 male praecox cases studied by him, epileptiform attacks in 12 cases. He gives the auto-intoxication theory as an explanation of these symptoms. These attacks appear, accord-

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ing to most authors, in the early stages of the disease. Tomaschny (14) who made careful observations concerning the physical symptoms of dementia praecox, states that most authors agree that the epileptiform attacks appear in the early stages of the disease, and that they very closely resemble true epileptic attacks. He tells of five such cases that were under observation at Treptow which were diagnosed as epilepsy prior to admission to the institution there, and during the first part of their stay they had typical epileptic attacks, but later on, on the disappearance of the convulsions, they were recognized as cases of true dementia praecox. One of these patients could always recognize the approach of an attack, and this condition could almost be regarded as an aura.

There was a history of hysteroid attacks in three cases. One of these patients gave the history of having hysterical attacks in childhood. Some writers regard hysterical symptoms in males in the adolescent period as forerunners of dementia praecox. Tomaschny noted attacks, hysterical in character, in 37 of his cases. They resembled in their mild form, the customary fainting with paleness of the face, everything getting dark before the eyes, and the patient quickly becoming unconscious. Sometimes they resembled an hysterical attack with deep, rapid breathing, and appearance of tonic convulsions, apparently maintaining consciousness. He also described other grades of the same manifestation.

Vertigo was noted in several cases, but was not a frequent occurrence. Tomaschny noted it in 46 of his cases, and believed that it was due to a sudden change of the blood pressures in the brain. In some of the cases the vertigo was associated with disturbances of innervation of the external muscles of the eye, as for example, he at times observed a form of nystagmus in cases of dementia praecox.

Headache was a rather frequent symptom, being mostly frontal and occipital in location; also accompanied in some cases by pain in the eyes. One soldier gave a history of severe headache and ocular pain prior to admission, which was associated with a mild, chronic granular conjunctivitis. While on furlough, he underwent an operation of his eyelids, which, however failed to relieve his condition. There is but little doubt that the soldier was insane at the time. He very shortly afterwards developed into a well marked case of catatonic praecox. Meyer-Königsburg (14) de-

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scribes a case where the headache was so severe and accompanied by vomiting, that a diagnosis of brain tumor was at first entertained. Other symptoms were peculiar sensations in the head, as a fullness of the head, burning sensation of the scalp, and emptiness of the head. As an anatomical foundation for the different kinds of pains and sensations, Tomaschny believes that there are three different processes which come into consideration: First, many sensations that may be attributed to parasthesia or neuralgia of the nerves of the scalp; second, changes in the meninges, fluctuations in the blood pressure, transient edema; as proof of this he states that praecox cases dying of accidental causes often show at autopsy, extensive edema of the pia and arachnoid; third, that it is believed the degenerative processes of the cortex in this disease are the cause of the pain; this, according to the newer investigations of Muller, was contrary to the earlier view that the cortex is not capable of recognizing painful sensations. It is also believed that when headache is accompanied by pain of the eyes, the latter is almost always due to the radiation of the frontal headache.

There were among the 59 cases of dementia praecox studied, two cases of high-grade imbecility, in which dementia praecox subsequently developed after enlistment in the army. The first of these cases was 25 years of age, he had had a year and a half of service; mental symptoms were noted three months before admission here. The diagnosis was regarded as feeble-mindedness on admission. In this patient there were present well marked stigmata of degeneration. There was also evidence of hereditary syphilis as the patient had Hutchinson's teeth. In the second case the soldier was 25 years of age, had had ten months of service, there were also present marked stigmata of degeneration as well as speech defect.

Depression was an early symptom in many cases and is often mistaken for melancholia or the depressed phase of manic-depressive insanity. Also the excitement sometimes noted in dementia praecox, many simulate the manic phase of manic-depressive insanity. However, both conditions have features by which the form of mental disease can be differentiated after the patient has been under observation for some time, and a thorough study of the case has been made.

Memory defects are often marked, especially for recent events. Ofttimes the defect is only apparent, and is really due to lack of attention on the part of the patient.

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Remissions occur in a number of cases of dementia praecox and several such cases were eventually returned to this hospital sometime after they had been discharged as apparently recovered. Dunton (15), quoting from French authors on dementia praecox, says regarding remissions, "If cures are rare and perhaps doubtful, on the other hand, remissions are frequent and sometimes sufficiently marked to allow the patient to resume their previous occupations and gives to their friends illusions of a cure. Actually only the acute phenomena (delusions, catatonic symptoms, crisis of excitement, etc.), are susceptible of improvement, the psychic defect remaining unchanged. There is nearly always present in the course of these remissions certain signs of chronicity, irritability, mannerisms, tics, and affected and bizarre conduct." It is during this remission that former inmates (either eloped or discharged patients) of insane institutions are likely to report at the recruiting stations for enlistment in the Army or Navy. They may present a fairly good impression at this time, and be in excellent physical condition and unless their mental status is carefully considered, may succeed in enlisting. There were among the cases studied, several who had been former inmates of insane asylums prior to enlistment, and who enlisted during a period of remission, carefully concealing their previous life history.

There were a few cases of the abortive form of dementia praecox observed. The defects noted in these cases were of a minor degree. White states, "These abortive cases and cases of remission in the early stages show defects only of a mild degree, and largely of the higher faculties. Many of these cases go to swell the ranks of criminals and hoboes and one often mistakes them for cases of feeble-mindedness."

There was a history of masturbation in ten cases, or 17%, which had been considered a cause of the psychosis in a number of the cases, prior to admission here. Modern writers on psychiatry are usually of the opinion that masturbation should be regarded as a symptom rather than a cause of the mental disorder. Dieffendorf (16) states, "In determining the cause of mental disease, one should guard against mistaking for causes the actual early symptoms of the disease, such as the excesses of the paretic, the self-condemnation of the melancholic, and masturbation of the hebephrenic."

As already mentioned, the average age of the paranoid group

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among enlisted men is 31.7 years. Most of them have had several enlistments during which they rarely rose above the rank of private. The discharge received at the end of the first enlistment would indicate that their services had been fairly satisfactory. The development of a psychosis was in most cases a very gradual one, a number had had depression and also persecutory ideas during the first enlistment. They were probably very vague ideas at that time and did not assume a systematized form until a number of years later. During the interim they had had no marked conduct disorder, and had managed to conceal the real condition of their mental state. A few gave a history of having had persecutory ideas at the time of their original enlistment, and had previously traveled from place to place, hoping to rid themselves of their imaginary persecutors, and as a last resort enlisted in the Army thinking that they would in this way be protected from persecution. As this group of patients represent individuals of fair intelligence, who are able to create quite a natural impression, especially in the early stages of their trouble, it is not surprising that they often succeed in being accepted for enlistment. It will always prove difficult to eliminate applicants for enlistment, who are suffering from the paranoid form of dementia praecox, unless a mental examination of sufficient thoroughness to reveal their true mental state, is made. These individuals are often quite clever in concealing their hallucinations and delusions.

The man suffering from paranoid praecox is often a very dangerous individual, as he is apt to commit assaults on those about him, expressly directing his attention to those in authority, imagining that they are the cause of the persecution he is undergoing. These individuals are often addicted to the periodical use of alcoholic stimulants to excess, and during this period their mental symptoms are very much aggravated.

Among some of the earliest symptoms of paranoid praecox, neurasthenoid symptoms were mentioned, also depression and seclusiveness. These patients act peculiarly, and are often very irritable, sometimes excited. Very soon delusions of persecution, more or less fixed in character, become manifest, also delusions of grandeur, fantistic delusions, visual and auditory hallucinations, especially the latter. There are also delusions of physical influence, electricity, hypnotism, magnetism, and X-ray being used on them. Impulsive and homicidal tendencies are often noted as well as the symptoms especially characteristic of demen-

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tia praecox, namely mannerisms, stereotypies, grimacing, negativism, etc.

As a result of the study of the military insane, the endeavor has been made to show that:

1. Dementia praecox has been the most frequent form of mental disease observed in both officers and enlisted men of the Unitd States Army during the past five years; that military surgeons should endeavor to give this form of psychosis special study:

2. The dissemination of a greater knowledge of psychiatry among military surgeons will result in the elimination of the majority of these cases at the time of enlistment; also that a number of those who succeed in enlisting, may be eliminated early in their service.

3. It is only by careful study of the life history as well as a thorough mental examination of the individuals of this class, that the majority of them can be excluded. Evidences of backwardness in school work, confirmed truancy in childhood, resulting in their confinement in reform schools for this and other minor offenses, history of tramp life, frequent changing of occupation, the presence of multiple stigmata of degeneracy as well as evidence of abnormal mental make-up should be especially sought for. It is not by any one symptom that they can be excluded, but by careful study of all the available data in the case.

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REPORT OF THE U. S. ARMY BOARD FOR THE STUDY OF TROPICAL DISEASES AS THEY EXIST IN THE PHILIPPINE ISLANDS.*

By Major W. P. Chamberlain, Medical Corps, U. S. Army, Captain Horace D. Bloombergh, Medical Corps, U. S. Army, Captain Edward B. Vedder, Medical Corps, U. S. Army.

THE Board for the Study of Tropical Diseases as they Exist in the Philippine Islands has the honor to submit the following report of its work for the quarter ending December 31st, 1910:

Captain E. D. Kilbourne, Medical Corps, who has been on the Board since March 10th, 1909, completed his tour of duty in the Philippines Division and sailed for the United States December 14th, 1910.

Captain E. B. Vedder, Medical Corps, joined the Board on December 14th, 1910.

DISAPPEARANCE OF BERIBERI FROM THE PHILIPPINE (NATIVE) SCOUTS.

With respect to the occurrence of beriberi among the Filipino Scouts the Board has to report results wrich are most gratifying and which a year ago could hardly have been hoped for by the most enthusiastic advocate of a change of dietary. The extraordinary decrease in the incidence of the disease for 1910 is shown in the following table:

TABLE I.

Admissions for Beriberi by months, Calendar Years 1908 to 1910.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Total.
1908.....	14	34	102	23	51	33	55	39	63	59	88	63	624
1909.....	138	89	96	88	38	24	28	36	7	27	22	11	604
1910.....	19	8	12	3	4	1	0	2	0	0	0	(?)	49†

Figures are taken from records of Chief Surgeon, Philippines Division, and differ slightly from those found in the reports of the Surgeon General of the Army.

*Report made to the Surgeon General, United States Army.

†For eleven months only, reports for December not yet being available.

On account of lack of space only a portion of this report is published at this time.—[Editor.]

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We believe that the elimination of the disease is due to the carrying out of certain recommendations made on September 30, 1909, by this Board (then consisting of Captains Phalen and Kilbourne) and promulgated by the Division Commander in a letter dated November 3, 1909. The most essential of our recommendations were (a) reduction of the rice allowance from 20 to 16 ounces, (b) substitution of 1.6 ounces of beans for the 4 ounces of rice taken away, (c) prohibition of "savings" on fresh beef. and (d) introduction of Filipino No. 2 rice (undermilled) in place of highly milled (polished) Saigon rice. The letter of the Division Commander put into effect all of these recommendations except the last.

In the latter part of March the order (G. O. 24, W. D., February 12, 1910), for a new Filipino ration was received. This ration proved unsatisfactory to both the troops and the Subsistence Department because many of the articles did not keep well and some were distasteful to the Scouts. It was revoked by cablegram on November 7, 1910. The new ration added mongos, camotes and ginger root to the dietary, reduced the rice component to 16 ounces and provided for Filipino No. 2 rice. Since mongos are equivalent to beans it will be seen that this new ration in spirit carried out most of the earlier recommendations of the Board.

Since the Filipino No. 2 rice did not go into use among the Scouts until August and to a slight extent in the last few days of July it is obvious that the marked decrease in the admission rate for beriberi in April, May, June and July, 1910, could not have been in any way related to the use of unpolished rice. This fact, however, does not disprove the polished rice theory of beriberi production. That theory is now based on the assumption that some element necessary for nutrition, (phosphorus ?) is lacking in polished rice and that beriberi will develop on a diet in which polished rice is the *predominating* component. If other food substances, such as beans and mongos, containing a large amount of the above-mentioned element, (phosphorus ?) are added to the diet it is evident that the results might be the same as if a greater quantity of rice which had not been deprived of the essential element were used to the exclusion of beans or mongos. It is in this way that we reconcile the Scout beriberi rates with the polished rice theory.

It should be mentioned that neither during nor preceding the year 1910 were there any sanitary changes, other than dietetic.

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among the Scouts which could account for the great reduction in the incidence of beriberi. The average monthly admission rate among the Scouts for diseases other than beriberi was higher in 1910 than it was in 1909. The death rate for beriberi for the Filipino population in general, both in Manila and in the provinces, was not reduced in the year 1910.

We have carefully analyzed all the factors bearing on the reduction of the beriberi rate for 1910 and shall shortly submit the findings in the form of a special report. The more important conclusions arrived at are as follows:

(1) Beriberi disappeared from among the Filipino Scouts in the year 1910.

(2) The decrease in admissions was clearly marked for four months before the issue of undermilled rice began.

(3) The decrease in the admissions for beriberi was due either to unknown causes operating coincidently with a reduction in the amount of rice used combined with the addition of a legumen, or was due directly to these dietary changes. As no other reduction in admissions even approaching that of 1910 has occurred since the organization of the Scouts in 1901 we do not believe that the present decrease is a coincidence.

(4) The facts do not oppose the polished rice theory of beriberi. We believe that they support it.

UNPOLISHED RICE FOR THE PHILIPPINE SCOUTS.

The Filipino No. 2 rice referred to above was an undermilled red rice. It met with much opposition because of its color, because there was much dirt and broken grain in it and because it seemed to become infested with insects and worms sooner than did polished rice. When the Board first recommended Filipino No. 2 rice there was no other kind of undermilled grain in the Manila market and the dealers and millers did not have the interest in the subject which they show today. The Board now realizes that the term Filipino No. 2 rice was an unfortunate one because, (a) Some Filipino No. 2 rices are highly milled or polished and (b) Filipino No. 2 rice is second grade not only in its degree of "milling" but also as regards its husking and screening and moreover is sometimes prepared from inferior palay.

A rice with red pericarp was first approved for issue because it was believed that if this proved unsatisfactory a change could subsequently be made to an undermilled grain having white peri-

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carp which, by contrast with the red rice, would probably then prove permanently satisfactory to the Scouts, whereas the same article undoubtedly would have excited hostility if immediately substituted for the highly polished Saigon rice formerly supplied by the Subsistence Department. Few of the Scouts were used to such a highly polished rice prior to enlistment but have come to think themselves dependent on it while in the Military Service.

What the Board is now recommending for the Scouts is an undermilled rice of the highest grade and in all respects like the choice Saigon rice of the Subsistence Department except that a large part of the pericarp is left on the grain. Such a rice can now be produced in the Islands or can be obtained in a standard grade from Siam. It should contain at least 0.4 per cent of phosphorus pentoxide.

IMPORTANCE OF SUPPLYING AN UNDERMILLED RICE TO THE SCOUTS.

In spite of the fact that beriberi was greatly reduced among the Scouts before undermilled rice was issued we still believe strongly that such a rice should be constantly used by them if the conquest of the disease is to be perpetuated. *It is considered that the adoption of an undermilled grain will allow rice to be used more freely by these soldiers with less risk of resulting beriberi than would be the case if the polished article were supplied to them.* This is a very important point because, as a result of racial taste and custom, a certain number of natives will subsist mainly on rice no matter how extensive, varied or well balanced may be the diet furnished them by the Subsistence Department. These men will be the first to develop beriberi if polished rice is being supplied to the troops.

Since rice is the natural and the economical diet for the Oriental native it follows that the free use of undermilled rice will work in the direction of both efficiency and economy.

THE PREPARATION OF RICE IN THE MILLS.

Members of the Board have visited several rice mills to study the process of preparing the grain for the market and a brief description of the details as carried out in one of the largest of the English mills in Pangasinan Province may be of interest.

The endosperm of rice consists of starch except for a thin outer portion called the aleurone layer which contains the albu-

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minous material of the seed, together with most of the fat. Outside of the endosperm and aleurone layer is the pericarp or "inner skin." The color of the pericarp varies in different species of rice from white to nearly black. The common varieties grown in the Philippines have the pericarp either brick-red or yellowish-white. The aleurone layer is adherent not only to the endosperm but also to the pericarp so that more or less of it is removed when the pericarp is detached from the dried grain. Outside of the pericarp is the husk. Rice with the husk still on the grains is called by the English "padi" and in the Philippines "palay."

The "palay" is husked between large horizontal revolving artificial stone disks separated by a distance about equal to the length of a rice grain. The chaff is winnowed out and the husked grains separated from the unhusked by screening.

At this stage of the process only a very small part of the pericarp has been chipped off and the grain as it comes from between the stones is called in Tagalog "pinaoa" or "pinawa." The next process "milling" is carried out by means of a vertical revolving conical artificial stone around which is a close-fitting metal-gauze case. Friction between the stone and the netting rubs off the pericarp and the aleurone layer, the degree of removal being dependent upon the distance between the netting and the stone, the speed of revolution and the length of time spent in the process. The dust escaping through the net consists of pulverized pericarp and aleurone layer and in the Philippines is spoken of as "tiqui-tiqui." In highly milled rice like the "choice rice" of the Subsistence Department all of the pericarp and all or most of the aleurone layer have been removed, only a lump of starch remaining.

Some of the common Philippine varieties of rice have a red pericarp, but if this is completely removed by much milling the grain is then as white as if a kernel with white pericarp had been treated in the same way. "Polished rice," "highly milled rice," "scoured rice" and "white rice" have been used by various writers as synonyms for rice deprived of its pericarp and aleurone layer. The use of the term "white rice" in that sense is objectionable as leading to confusion between milling processes and color of pericarp. "Undermilled rice," "medium milled rice," "unpolished rice" and "red rice" are terms which have been applied to rices with considerable pericarp and aleurone layer left adherent to the grain. If the pericarp was red the grain will show various shades from red to pink, depending on the amount of that layer which

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has been removed. Rice with yellowish-white pericarp which has been undermilled can be seen on careful inspection to be rougher and less pearly-white than highly polished rice. If rice be stained with Gram's iodine solution, then washed and dried, the pericarp will be gray, while the parts denuded of pericarp and any highly polished grains will be dark blue, almost black.

As far as the presence of adherent pericarp is concerned undermilled rice corresponds with the "cured rice" of India and the Filipino No. 2 rice prescribed in the recently revoked Filipino ration. "Cured rice" has been parboiled and then dried before milling, the result being that the pericarp and aleurone layers are less easily removed from the kernel. Cured rice is not used by the natives of these Islands.

The last process of treatment in the rice mill is the polishing which is carried on between a fixed wire screen and vertical revolving conical buffers covered with long-wooled sheepskin. This process is not applied to all rices. It removes the "tiqui-tiqui" dust from the grain but does not remove any appreciable amount of the flakes of pericarp left adherent to the kernel after the rice has passed the conical milling stones. Therefore, the polishing process may be applied to undermilled rice without depriving it of pericarp and will tend to free it from adherent "tiqui-tiqui" dust which probably makes the grain more susceptible to the development of worms and insects.

At various stages in the process of preparing the rice it is winnowed and screened to remove dirt, dust and broken grains, the commercial grade depending in part on the thoroughness of these steps, in part on the amount of pericarp left on the grain and in part upon the original quality of the "palay."

It is considered that a rice containing over 0.4 per cent of phosphorus pentoxide will not cause beriberi and one with less than that amount is unsafe if the rice forms the principal article of diet. It is not claimed that lack of phosphorus is necessarily the cause of beriberi, but it does seem established that the per cent of phosphorus is a reliable *indicator* of the beriberi-producing power of a given rice. The phosphorus of the kernel is almost exclusively confined to the pericarp. After some experience it is possible to determine macroscopically, either with or without staining, whether a given sample of rice has sufficient pericarp left on the grain to render it a safe article of diet for Oriental peoples. We have found that this can be done with more ease and certainty after the grain is stained with Gram's iodine solution.

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EXPERIMENTS ON THE PRODUCTION OF MULTIPLE NEURITIS IN FOWLS.

About eight months ago the Board began an extensive series of rice feeding experiments on fowls with a view to determining the effects of various grades of Filipino rices when used as an exclusive article of diet. Other subjects for experiment suggested themselves from time to time, so that the work has just been completed and will shortly be made the subject of a special report. Consequently, only a brief summary of the work and conclusions will be submitted now. References to parts of this work have been made in the quarterly reports for June, 1910, and September, 1910.

In all, we carried out feeding tests on 59 cocks, the period of observation for the individuals varying from 25 to 125 days. Each fowl was kept in a separate cage and the cages were surrounded by a lofty board fence with a locked gate so that there was no possibility that any received unauthorized diet. The amount of the rice ration was carefully regulated and the fowls weighed each week. Only cocks were used for these observations. Examinations were made of the leg nerves of all fowls which died. As a result of the work we reached the following conclusions:

(1) Fowls develop polyneuritis in about thirty days when fed exclusively on highly milled rice, whether Saigon rice ("choice rice" of Subsistence Department) or Filipino No. 1 rice is used. That fowls on highly milled rice develop this disease has been known for years but there was no record, when we began, that experiments had ever been tried with a Filipino No. 1 rice.

(2) Forcibly feeding highly milled rice to such fowls as have no appetite for it will not prevent the appearance of neuritis. Most fowls fed on highly milled rice quickly lose appetite and eat but a small part of their ration.

(3) Those fowls which voluntarily eat heartily of highly milled rice are able thereby to maintain their body weight and to defer or prevent the development of multiple neuritis. Three fowls which ate their full daily ration of rice remained well for 98, 97 and 78 days, respectively, at the end of which periods the experiments were discontinued.

(4) The administration of the inorganic salts of phosphorus and of potassium, either alone or combined, to fowls subsisting on a highly milled rice diet neither prevented multiple neuritis nor deferred its onset. For reasons to be stated in our special re-

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port we did not try the effect of phytic acid combined with highly milled rice.

(5) Fowls fed on unhusked rice, ("Palay"), do not acquire multiple neuritis.

(6) Fowls fed on undermilled rice do not develop polyneuritis. The same result is obtained whether the grain has a red or a yellowish-white pericarp.

(7) Fowls which are allowed water but no food develop multiple neuritis. The same is true of fowls starved on reduced rations of a neuritis-preventing undermilled rice. We obtained this result in 5 cases. Previous observers have reported that starvation does not cause neuritis. In our cases when death was apparently close at hand we were unable to determine if neuritis or merely weakness existed. By carefully feeding these moribund cocks on a nuritis-preventing diet we were able to save many of them and in a day or two strength would return and the general condition improve. The symptoms of polyneuritis would then be apparent and, subsequently, when the fowls were killed, their sciatic nerves would show degenerative changes.

(8) Fowls confined without food and those fed on highly milled rice and water lose weight with equal rapidity. A loss of at least 20% of bodily weight almost invariably occurs before the symptoms of neuritis become apparent.

(9) The signs and symptoms and the nerve appearances are identical in neuritis produced by starvation and in that produced by feeding polished rice.

(10) Spasticity was a late development in some of the cases of neuritis which were saved from death by the institution of mixed feeding. These fowls were subsequently killed and in none of them did we find evidences of degeneration in the cord to account for the spastic gait.

The bearing of these results on the etiology of beriberi is still to be worked out. Stanton and Fraser consider that neuritis in fowls is an *index* of the beriberi-producing power of a rice. These authors consider beriberi and polyneuritis gallinarum closely allied while some others hold the reverse view. From our experiments we are inclined to think that cocks readily develop multiple neuritis and that because certain causes excite nerve changes in the fowl it would be unsafe to assume that the same cause would produce neuritis in man. However, as Stanton and Fraser say, the acceptance of the polished rice theory of beriberi rests on testimony other than the identity of beriberi and the polyneuritis of domestic fowls.

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SOME NOTES TAKEN AT SURGICAL CLINICS IN CHICAGO DURING CONVENTION OF SURGEONS OF NORTH AMERICA IN NOVEMBER, 1910.

By Major Powell C. Fauntleroy, Medical Corps, U. S. A.

Doctor John B. Murphy, Mercy Hospital:

Treatment for hydrocele, chronic inflammation of bursae and sheaths of tendons:—Aspirate fluid and inject five to ten drops of campho-phenique (equal parts of camphor and phenol rubbed together.)

For tubercular adenitis or tubercular osteomyelitis:—Clean out all necrotic tissue suture securely structures overlying cavity and then inject 10 c. c. Larch turpentine (Venice). Relieve pain from reaction with morphine, hypodermically. When tension becomes very great, incise and evacuate turpentine and phagocytic pus, without drain. If cavity should fill up again, aspirate and repeat injection of Venice turpentine. Always put on Buck's extension apparatus in all cases of joint or peri-joint inflammation to prevent fibrous or bony anchylosis.

Tuberculosis never attacks primarily the joint structures, but begins as an osteitis in the cancellous structure of the bone; breaking into the joint cavity later in neglected cases. Unlike the picture presented by a case of acute osteomyelitis, the patient is not incapacitated immediately following the location of the process, but is able to be up and around for days or weeks, before he is compelled to keep his bed.

In acute osteomyelitis, following trauma or exposure to cold, the patient is immediately incapacitated by pain, and if the tension, due to pus in the *shaft* of the bone, is not relieved surgically, the pus breaks through the compact bone by the route of the Haversian canals (never through the epiphysis), stripping up the periosteum on the shaft and destroying that portion of the bone involved within forty-eight hours after the beginning of the process. Hence surgical relief should be given promptly.

The tenderness of tubercular osteitis and acute septic osteomyelitis in their incipiency is only elicited by deep steady pressure

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and not by superficial and light pressure. This fact differentiates them from a rheumatic process with which they are recklessly confused in a very large per cent of cases.

In all tubercular lesions give tuberculin solution No. 2, (from three to five minims). Gauging dose so as never to get a general reaction of over 99.6° F. If there is local reaction with fever coming on earlier than twenty-two hours, the tuberculin has been given improperly and will harm the patient. The true tuberculin reaction comes on twenty-two hours *after* the injection has been given and never earlier. Tuberculin stimulates the encapsulating process.

Solution No. 1.=0.1 per cent of tuberculin. Solution No. 2.= 0.01 per cent of tuberculin. Solution No. 3.=0.001 per cent of tuberculin. Koch's old tuberculin made by Lucius and Brennen is used. Each patient's susceptibility to tuberculin must be the guide for the quantity given; never permitting a general reaction of over 99.6° F. and never earlier than twenty-two hours.

Solution No. 3, is used for diagnostic purposes; never using over three minims at first. No. 2 is used for curative action in beginning treatment. Some patients will later tolerate solution No. 1.

The curative action of tuberculin is beyond a doubt, but requires a most careful and scientific use. If properly given beneficial results follow certainly. This should be a part of the treatment of phthisical cases.

In spinal tuberculosis, put at rest and give tuberculin and X-ray.

In Neisserian and tubercular synovitis, aspirate fluid and inject joint cavity with two per cent glycerine solution of formalin (never less than twenty-four hours old), and put on Buck's extension. Relieve pain by morphine, hypodermically. If joint fills up with fluid, repeat injection. Never put in drainage as it will surely give rise to mixed infection. In tubercular joint infections, after injecting with turpentine, expose to X-ray. Latter hastens incapsulation. In mixed infections, use formalin injections.

When anchylosis occurs Murphy's arthoplastic operation of interposing lateral facia flaps between the bone ends and rotation of superior patella flap 180 degrees, restores the joint to a most useful one. This operation for the restoration of joints is an epoch-making one in the history of surgery.

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In preparing patient for any surgical operation, the skin is cleansed with soap and water, alcohol, and an application of tincture of iodine.

Murphy's practice in case of compound fracture or dislocations, with protruding bone, when first picked up in the street or elsewhere, is not to attempt to cleanse wound, other than to picking off gross particles *with forceps,* but immediately paint skin surface and protruding bone with tincture of iodine and put on an occlusive sterile dressing with such fixation possible. Later he trims off dirty tissue on end of protruding bone, reduces fracture or dislocation, sutures wound and applies splints.

A case of severe Colles' fracture, with protrusion of end of ulna, was operated on and, three days later, the case was in excellent condition.

It seems to me that there can be no doubt that the application of tincture of iodine should play a part in the future applications of first aid on the battle field.

In the restoration of the shafts of bones, it is only necessary that a strip of the crest of the tibia or elsewhere, be securely fixed between the separated parts of the bone, so that its ends are securely placed in contact with living osteogenetic elements under aseptic conditions. Operation demonstrating technique, together with exhibition of many successful cases of restoration of humerus, tibia and femur. Phospho-bronze wire and magnesium plate and iron nail were the material used in fixation of transplanted bone.

Eight strands of very fine phospho-bronze wire are used as a ligature, rather than one strand of larger size. This principle of increasing strength of a ligature or suture is always followed in the use of cat-gut also.

This phospho-bronze wire is an excellent suture for soft tissue such as ligaments, tendons, facia and muscles, because of its great tensile strength and non-irritating properties. It is used in cases of large lesions in old people, when tissues must be kept approximated securely for a longer time than in the young.

All cases of surgical operation of much consequence, are given saline solution continuously, per rectum. The flow is so regulated that they get three minims every second.

In cases of intra-abdominal operation, they are placed in the Fowler position.

Treatment for hernia: Ligation, excision of sac, suturing conjoined tendon to Poupart's ligament, but not transplanting cord.

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Never apply plaster following acute injuries or surgical operations for more than 3/5 the circumference of a limb. In closing abdominal incisions, always suture peritoneum so that its edges will be everted and thus prevent adhesions to line of incision. Before suturing skin put in interrupted silk worm gut sutures through skin and underlying facia and after suturing skin with a continuous horse-hair suture, tie silk worm suture over a small roll of gauze, thus obliterating space beneath skin and preventing accumulation of body fluids. The sutured incision is dusted with powder of subiodide of bismuth for dessicating purposes.

After intestinal operations the edges of the abdominal incision are swabbed lightly with a compress saturated with a 1 per cent solution of lysol for its peculiar adverse effect on any colon bacilli that may have gotten in the wound and also for its stimulating action to tissue which have been subjected to such trauma, thus assuring prompt union.

Treatment of syphilis: Give intramuscular injection of a perfectly *neutralized* preparation of "606," and repeat in a few days if spirochetae are still present in lesions. Organisms usually disappear from lesions after first injection. There should be no great local reaction.

Sodium cacodylate causes disappearance of organisms in primary lesions. Also disappearance of symptoms in a large number of early secondary cases. Give large initial doses, 0.200 Gms., and then 0.065 Gms. daily until organism disappear from lesions. They usually disappear in the first week of treatment. Neither of these remedies will restore lost tissue of any kind so do not expect too much from them.

When a limb is amputated draw down and bisect nerve trunk, cut off one lateral half of nerve and double other half so that cut end of each half will approximate; suture. This prevents painful nerve-end tumors subsequently.

Doctor A. J. Ochner, Augustana Hospital:

The clamp and cautery operation is preferable to any other in all cases of hemorrhoids. No necessity for tube or packing in rectum after operation.

No tissue unites sufficiently to bear strain earlier than ten days after any operation. Hence there is nothing in getting patient out of bed in three of four days following abdominal operations, outside of its advertising feature.

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Treatment of amoebic dysentery: Appendicostomy or not: depending on the extent of lesion in colon.

Flush colon out three times daily with the following solution:

Thymol 0.150 gms. and alcohol sufficient to dissolve it; Quinine sulphate 60.00 and sufficient aromatic sulphuric acid to dissolve it; sterile water one gallon. Give cold as possible. Put large tube in rectum so as to permit a rapid exit of solution. Several successful cases cited.

Doctor Wm. R. Cobbins, Post Graduate Hospital.

In doing operation for radical cure of hernia, never dissect off vascular connective tissue covering aponeurosis of external oblique as it carries the blood supply of facia.

Chromicized cat gut No. 2 is used for ligatures and sutures.

Lane's kink, in lower end of illium demonstrated.

Cases of constipation with autoinfection from chronic enlargement and prolapse of colon, exhibited and one operated on by removal of entire colon.

Exhibition of cases showing beneficial effect of corsets for enteroptosis was made by Doctor Martin.

Howard A. Kelly's stero-clinic was exhibited by Doctor Soloman. It shows step by step many operations by many of the principle surgeons of the world. It should be very useful as an aid to teachers.

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Current Literature.

Titles marked with an asterisk (*) are abstracted below.

AUSTRIA.

Der Militärarzt.

December 9, 1910.

1 Piquet's Method of Physical Examination in Determining Fitness for Military Service.
2 *The Sanitary Officer as an Aurist.
3 Report of the Meetings of Military Surgeons—at Vienna and Prague.

2. **The Sanitary Officer as an Aurist.**—This is a review by Dr. Hofer of Dr. Doljer's book so entitled. Mention is made that under the present system in the German Army there is attached to every army corps a fully equipped oto-laryngeal dispensary in charge of a competent specialist.

The author also advocates that in addition to this, every sanitary officer of the army should have sufficient knowledge of this speciality to enable him to quickly diagnose and give an intelligent prognosis in ordinary cases of ear trouble. Also in the examination of recruits to be able to note congenital defects of the auditory apparatus which would indicate predisposition to ear disease, and to judge whether or not the existing defect is liable to result in disability later on.

MRS. LEONARD HUGHES.

FRANCE

Archives de Médecine et Pharmacie Navales.

February, 1911.

4 *Typhoid Peritonitis in the French Navy (1900-10).
5 Note Relating to the Method of Serving Drinking Water on Board Ship.
6 Circular of the Under-Secretary of State Relative to the Construction and Administration of the Neuro-psychiatric Service in Marine Hospitals.

4. **Typhoid Peritonitis.**—Incident to the extensive study of typhoid in all its manifestations, instigated by the extensive preva-

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lence of the disease in the French Navy, the following considerations are of interest:

"Does the gravity of typhoid influence the frequency of perforation?" M. Chantmesse is of the opinion that this is a predisposing cause, on the other hand, George Woods maintains that benign cases give rise to this complication more frequently than any other. Curschman is of the same idea, and cites the perforations that occur in the course of ambulatory typhoid.

The frequency of perforation also depends upon the violence of epidemics. Thus in a total of 200 cases treated in the hospital at Brest, during the years 1905-1906, 16 deaths are recorded, of which but two were attributable to perforation, a proportion of 1%,—while in March, 1903, in an epidemic of typhoid, which occurred in the barracks of the colonial artillery, 21 cases were admitted to the hospital, and of the total 7 died, of which in 2 cases perforation existed. Here the proportion rises to nearly 10%. The virulence of the bacillus of Eberth is exalted in certain epidemics, and leucocytic infiltration of Peyer's patches becomes more intense, provoking in the intestinal wall necrotic-thrombosis. It seems also, in a typhoid epidemic, that the first cases which appear, are more liable to perforation: thus in the epidemic of December, 1909, the first case admitted, arrived December 9th; of the 4 cases which suffered from perforation, one fell ill December 10th, the second on the 11th, and the third the 13th; that is to say, the first attacked were most liable. Perforation spares no country or race; according to Hart, however, it is less frequent in hot, and semi-tropical climates, than in those which are temperate or cold. It is encountered more frequently in England than on the Continent. It is very frequent in America, and if we credit the statement of Hoggard, each year from 15,000 to 16,000 die in that country from perforation. Briggs makes the figures 10,000. In Mexico the complication is very rare. The influence of seasons is not appreciable. Perforation, is according to M. M. Debic and Troment, a rare accident in relapses of typhoid fever.

JOHN C. WISE.

Le Caducée.

February 4, 1911.

7 *The Colloid Metals.
8 *War Surgery.
9 Campaign Against Cholera in Tunis.
10 *New Pathognomonic Sign of Malaria.

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7. **The Colloid Metals and their Therapeutic Uses.**—Describes the colloid state and its preparation, especially of silver and mercury, the metals mostly used in that form. Colloid solutions rendered stable and isotonic (harmless to the tissues) have recently been extensively tried in France and give promise of soon becoming a valuable addition to our list of efficacious remedies.

8. **War Surgery. Treatment of the Wounded at the Dressing Station.**—This is a translation of an excellent article published in Deut. Milit. Zeitsch., Oct. 20, 1910, by Surgeon General Herhold.

10. **New Pathogonomic Sign of Malaria.**—As the plasmodium cannot always be easily found, other signs have been searched for and found, such as the agglutinative power of malarial serum upon the blood of the malarial patient and the presence of urobilin in the urine. Dr. Urriola, of Panama, proposes another, namely the constant presence of hematic pigment in the blood plasma and the urine of malarial patients. He preferably looks for it in the urine. After centrifugation the pigment is examined under the microscope. It presents itself under four aspects: very fine grains in clusters, larger grains also in clusters, large polymorphous masses, and, lastly, grains imbedded in hyaline plates or in leucocytes. Grains of blue pigment are also always found and, sometimes, grains and masses of ochrous pigment. To sum up, malarial urine is characterized by abundant black hematic pigment, blue pigment in small amount and occasional ochrous pigment. According to Dr. Urriola, the absolute demonstration of malaria rests on these two pathognomic signs: presence of the plasmodium in the blood, and of black pigment in the urine. Of the two, the latter is the most constant.

February 18, 1911.

11 *Antityphoid Vaccination.
12 *Medical Inspector Kelsch.
13 *Field Material.
14 Tropical Pathology.

11. **Antityphoid Vaccination.**—This subject has recently been under discussion in the French Academy of Medicine. The results already obtained in England, Germany and the United States appear to have been unknown or discredited, and the conclusions of the Academy were that, at this time, antityphoid vaccination in the French Army would be premature, excessive and perhaps dangerous.

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12. **Medical Inspector Kelsch.**—A member of the Academy of Medicine, lately deceased, and counted among the four most distinguished contemporaneous medical officers of the French Army, the other three being Michel Levy, Sedillot and Villemin. Of the numerous investigations of Kelsch, one of the most important is that relating to the etiology of cerebro-spinal meningitis. He first recalls the doctrine of Pasteur that a passive and harmless microbe can, under certain conditions, become pathogenic and give rise to what seems a new disease or the spontaneous outburst of a known disease. He applies it to the carriers of the germs of cerebro-spinal meningitis, contending that in the victims of an epidemic of this disease, the bacteria pre-existed and were the determining cause of it, but not the result of it. Without denying the possibility of direct contagion, he attributes to it only a secondary role in the genesis and extension of the disease, convinced that the latter results chiefly from the increased virulence of germs which in a torpid state, vegetate in our system or in the ambiant air.

13. **Field Material. Litter Shelter-Tent of Ravenez and Kohl.**—Bearing in mind the difficulties of sheltering the wounded on or near the battlefield, these medical officers have devised a litter (The French litter slightly modified) which can be converted into a shelter tent. Two litters are necessary for a tent. The four poles form the framework, the canvas beds the two walls, and the slings the guy ropes. V. HAVARD.

Bulletin de L'Académie de Médecine.

January 31, 1911.

15 The Role of Emigration in the Extension of Cholera during 1910. M. Chantemesse and M. Borel.

16 The Sterilization and Dessication of Medicinal Plants. M. Em. Bourquelot.

17 The Treatment of Human Actinomycosis. M. Antonin Poncet and M. Leon Berard.

18 *Anti-typhoid Vaccination. Discussion by M. E. Delorme and M. Netter.

February, 7, 1911.

19 *Report Upon the Use of the Term "Mediterranean Fever" Instead of the Designation "Malta Fever." Committee: Mm. Chantemesse, Benjamin, Wurtz and Widal.

20 *Anti-typhoid Vaccination. Discussion by M. L. Landouzy and M. Chauffard.

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21 *Anti-typhoid Vaccination. Discussion by M. Chantmesse, M. Ed. Delorme, M. Landouzy, and M. Netter.

18-20-21. **Anti-typhoid Vaccination.**—The three numbers of the Bulletin of the Academy of Medicine noted above contain the reports upon the discussion of anti-typhoid vaccination elicited by the report of the Committee of the Academy which was abstracted in the March number of the MILITARY SURGEON.

M. E. Delorme, Medical Inspector General of the Army, stated that he thought the conclusions of the Committee premature and excessive and that it would be imprudent for the Academy to accept them at this time.

M. Netter, in answer to M. Delorme, stated that it was the unanimous sentiment of the Committee that anti-typhoid vaccination was a measure of the greatest utility and should be employed by practitioners of medicine, as it undoubtedly protected from the disease and decreased the virulence of the infection. He quoted the figures given by Colonel Firth in a letter, regarding the effect of vaccination in the British Army in India. In 1909, there were 33,900 soldiers in this army inoculated against typhoid, while 34,500 were not protected; in October, 1910, there were 50,000 of the army vaccinated and 17,000 not vaccinated. The effect of vaccination in the Indian Army in 1909 is shown in the following table:

	Vaccinated.	Unvaccinated.
Total number of soldiers.....	33,967	34,566
Number of cases of typhoid....	158	481
Number of deaths.....	17	96
Proportion of cases per 1,000...	4.7	13.9
Proportion of deaths per 1,000..	0.6	2.6

As regards the effects of vaccination upon those who afterward contracted the disease, M. Netter gave the following figures supplied by Col. Firth.

	Vaccinated 1 time.	Unvaccinated 2 times or more.
Total cases of typhoid.....	48	110
Total deaths.....	5	12
Proportion of cases per 1,000.....	2.06	2.1
Proportion of deaths per 1,000.....	0.31	0.29

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He also called attention to the fact that complications were less numerous among the vaccinated than among the unvaccinated and that the duration of the disease was less. He gave *in extenso* the work accomplished in our own army as published by Major F. F. Russell, and calls attention to the outbreak of typhoid in the First Battalion of Engineers at Washington Barracks, recently reported by Lieut. Foster, as an excellent example of the value of anti-typhoid vaccination. Netter regards the "negative phase" as a greatly exaggerated danger and a negligible quantity if proper dosage be employed.

M. L. Landouzy urged that the Academy recommend officially the use of anti-typhoid vaccination, especially in the French Army. The following figures given by him are of interest as they show the relative frequency of typhoid in the principal foreign armies:

MORBIDITY OF TYPHOID IN ARMIES.

	French	Austrian-Hungary.	German.	English.
1905	5.1	1.9	0.67	0.60
1906	5.1	2.0	0.41	0.60
1907	4.3	2.1	0.50	0.70

MORTALITY OF TYPHOID IN ARMIES.

	French.	Austrian-Hungary.	German.	English.
1905	0.68	0.26	0.08	0.11
1906	0.66	0.28	0.06	0.09
1907	0.61	0.27	0.06	0.11

He concludes his able discussion by stating that for humanitarian, scientific, and economic reasons, the Academy should adopt the conclusions of the Committee.

M. Chantemesse stated that the efficiency of vaccination against typhoid as now practiced in the English and American armies is beyond doubt, being proved by the results which have been obtained in both man and laboratory animals. He believes that in the vast majority of cases there is conferred a lasting immunity against typhoid by the vaccination, and that the method should be adopted in France, especially in the public services.

19. **Report Upon the Use of the Term "Mediterranean Fever" Instead of "Malta Fever."**—A Committee composed of MM. Chantemesse, Benjamin, Wurtz and Widal was appointed by the

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Academy to consider the advisability of using the term "Mediterranean Fever" as the official designation of the fever generally called "Malta Fever." The government of Malta protested through the British Ambassador, against the use of the term "Malta Fever" as being prejudicial to Malta and unjust, in that this fever is endemic in many other countries, notably in those bordering upon the Mediterranean Sea, having been observed in Egypt, Tunis, Tripoli, Algeria, Cyprus, Greece, Sicily, Crete, Italy, France and Spain, as well as in India, Central Africa and the Philippine Islands. The Committee recommended that the term "Malta Fever" be abandoned and that hereafter the disease be known officially in France as "Mediterranean Fever." The recommendation of the Committee was adopted by the Academy.

CHAS. F. CRAIG.

GREAT BRITAIN.

Journal of the Royal Army Medical Corps.

February, 1911.

22 Robert Jackson, M. D., Inspector of Hospitals. By Major H. A. L. Howell, R. A. M. C.

23 A Report on the Determination of the Amount of Tin in Tinplate Used for Canning Preserved Food. By Major W. W. O. Beveridge, D. S. O., R. A. M. C.

24 Note Upon Yellow Fever, Bilious Remittent and Remittent Fevers in West Africa. By Sir Rupert Boyce, M. B., F. R. S.

25 Blood-Culture in Typhoid Fever. By Major S. L. Cummins, R. A. M. C.

26 *Sterilization of Water on a Large Scale by Means of Ultra-Violet Rays. By Mark Foulds.

27 *Recent Tendencies in the Development of Army Medical Services. By Leiutenant-Colonel M. W. Russell, R. A. M. C.

28 Milk in India. By Major R. J. Blackham, R. A. M. C.

29 A Modified Equipment for the Royal Army Medical Corps. By Captain K. H. Reed, R. A. M. C.

30 Notes on Twelve Cases of Syphilis Treated with "606" in the Military Hospital, Glasgow. By Lieutenant-Colonel H. Gordon-Hall, R. A. M. C.

31 The Sedimenting Effects of the Sera of Horses and Sheep on Bacillus Typhosus and Bacillus Coli. By Major F. Smith, R. A. M. C., Assisted by Assistant-Surgeon C. F. H. Quick, Indian Subordinate Medical Department.

32 A Case of Fracture of the Skull. By Captain Hugh Stewart, R. A. M. C.

33 A Case of Osteoma Growing from the Upper End of the Humerus. By Captain E. G. French, R. A. M. C.

34 Final Report of the Sudan Sleeping-Sickness Commission, 1908-1909. By Captain R. G. Anderson, R. A. M. C.

35 Notes on North China. By Captain E. J. Elliott, R. A. M. C.

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26. **Sterilization of Water on a Large Scale by Means of Ultra-Violet Rays.**—Foulds says that the problem of producing a drinking water for public distribution which will not propagate maladies has been most commonly solved by more or less frequent filtration of the water through sand filter beds of various density. Another process has been frequently advocated in the last few years, viz.: Adding to the water certain chemical products such as salts which form precipitates; chlorine, which in itself is a strong bacterial agent; or oxidizing substances, the principal of which is ozone. These processes are frequently objectionable by reason of odor or waste products found. All these different processes, whether dealing with small or large quantities of water, have found a very serious competitor in the method of treatment employing ultra-violet rays, it having been frequently demonstrated that sterilization by means of ultra-violet rays is not only safer than by any other method, but also infinitely simpler and cheaper. Studies were begun in regard to the application of the ultra-violet rays to the sterilization of milk and water. It is now a question of almost general knowledge that dangerous microbes contained in water are killed with quite remarkable speed by means of the ultra-violet rays.

The following, one type of apparatus used, has a capacity of 130 gals. an hour: The normal illuminating lamp, consuming 3.5 amperes at 110 volts, is suspended in the apparatus above the surface of the water. The apparatus itself is enameled white, this finish inside giving a good reflection of the rays, thereby increasing the efficiency.

The water in the apparatus is under violent agitation and is exposed for about five seconds to the influence of the rays from the lamp. The agitation of the water is obtained by passing it through conical baffles which are placed inside the apparatus for the purpose of submitting with certainty every particle of the water to the influence of the rays, also repeatedly turning over any dust particle which might be floating in the water and so form a shadow over the microbes.

The few seconds that the water remains in the apparatus do not allow it to take the taste of the ozone which in small quantity surrounds the lamp, but which has been definitely shown to be without effect on the process of sterilization going on. The water does not in any way change in its chemical composition; there is no evaporation of the dissolved gases and no precipitation of the

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soluble salts. The water leaves the apparatus as it enters it, with the exception that all life is annihilated.

27. **Recent Tendencies in the Development of Army Medical Services.**—Lieutenant Colonel Russell says that constant vigilance is necessary to appreciate the trend of development and to make the alterations in the field service regulations which may prove to be necessary. The experience of actual wars is the main factor in bringing about changes. The battles in Manchuria lasted over a long period of time, up to ten or fourteen days. Battles in campaigns in the future may not last as long, but we may safely infer that serious engagements will last longer in the future than in the past. The lengthening of the duration of the fight is due mainly to the development of the weapons used. Troops having committed themselves to a position within effective range, can advance but slowly, while retirement has become a most costly process. This has a very material effect on the medical work. Carrying away wounded under fire on stretchers has become an impossibility, unless exceptional cover is available. The lesson was not learned at once, and both Japanese and Russians lost heavily in their medical personnel until it had been grasped. In the later engagements the Japanese did not attempt to carry away wounded until firing had ceased, or until darkness had supervened. All that will be possible to do in the future will be to collect the wounded into clusters at the nearest available shelters. They will have to be attended to in these places for some time by the regimental medical personnel. The chief military powers have noticed this and everywhere show a tendency to add to the resources of the regimental personnel. Germany has recently led the way in making her stretcher bearers Geneva Cross personnel. France and Austria have followed suit. This means that sixteen men per battalion, in addition to the technical trained personnel, are maintained and trained solely for medical duties. Band men are used as auxiliary stretcher-bearers only.

Col. Russell calls attention to the great importance of the collecting stations. These are known in the continental armies as the slightly wounded stations. These should be located as early as possible and amply provided for.

ALBERT E. LOVE.

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Public Health.

February, 1911.

36 A Scheme for the Municipal Control of Pulmonary Tuberculosis. William Robertson, M. D., D. P. H.
37 Sanitorium Treatment and the Selection of Suitable Cases. H. Gordon-Smith, M. A. M. B., D. P. H.
38 Some Observations and Heterodox Virus on Tuberculosis. S. G. Moore, M. D., D. P. H.
39 *The Use of Tuberculin in Anti-tuberculosis Dispensaries. W. Camac Wilkinson, M. D.
40 The Ventilation and Heating of Schools. Sidney Baswise, M. D., D. P. H.

39. Use of Tuberculin in Dispensaries.—Wilkinson urges the value of tuberculin in the treatment of tuberculosis and advocates the establishment of tuberculin dispensaries, where this agent may be used in the diagnosis and treatment of the disease. He has established such dispensaries in England, and is enthusiastic over the results which have been obtained, especially in early cases and in laryngeal tuberculosis. He has seen no ill effects from tuberculin in the hands of those who know how to use it, and is confident that it is an agent of the very greatest value in the diagnosis and treatment of the disease.

CHAS. F. CRAIG.

The Indian Medical Gazette.

41 *Sandfly Fever in Chitral. By Major F. Wall, I. M. S.
42 A Speculation on Diabetes Mellitus. By Major T. H. Foulkes, F. R. C. S., I. M. S.
43 *Gleanings from the Calcutta Post-mortem Records. IV. Cirrhosis of the Liver. By Leonard Rogers, F. R. C. P., I. M. S.
44 Pancreatic Cysts. By Assistant Surgeon O. G. Hassan Suhrawardy.
45 Treatment of Kala-Azar by the Hypodermic Injection of Quinine. By E. Muir, M. D.
46 A Method of Performing Gastrojejunostomy. By Lieut. Col. J. R. Roberts, F. R. C. S. (Eng.), I. M. S.

41. Sandfly Fever in Chitral.—Major Wall, I. M. S., describes an acute specific fever endemic in Chitral during the hot season (May to September) at moderate elevations (up to 5,000 feet) characterized by (1) fever (101°-102°) of from one to four days' duration; (2) prostration, which in many cases is very marked and out of proportion to the severity and the duration of the fever; (3) muscular and joint pains and (4) suffusion of the eyes. No rash has been observed. The pulse is full and

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rapid; rapidity corresponding with the elevation of the temperature. Headache, anorexia and constipation are also constant symptoms.

The general characters of the disease make it identical with that described as "pappateci fever" by Doen, a fever prevalent on the Austria-Hungarian Littoral, and that described by Lieut. Col. Bert, R. A. M. C., as "Phlebotamus fever" from Malta and Crete.

This conclusion is strengthened by the fact that the transmitting agent of the above fever, the sandfly, has been found in Chitral and identified.

43. **Calcutta Post-Mortem Records.**—Dr. Leonard Rogers closes an excellent and exhaustive article with the following conclusions:

1. Cirrhosis of the liver is several times as frequent in Calcutta among natives of India as it is in a temperate climate; but is not especially common among European residents there.

2. Although Mahomedans are forbidden the use of alcohol by their religion, the cirrhosis is only slightly less frequent among them than in Hindus in proportion to their relative numbers; not more so in fact than in the case of abscess of the liver, in which alcohol is only a predisposing and not an exciting cause. For this and other reasons the increased frequency of cirrhosis in India cannot be explained on any theory which makes alcohol the most important exciting cause of cirrhosis.

3. One-fifth of the cases in Calcutta are secondary to kala-azar, being partly of the typical intralobular form described by me, but also commonly of the ordinary portal or multilobular type or both combined.

4. There is no evidence that malaria ever produces a clinically evident cirrhosis of the liver in Calcutta.

5. Hanot's hypetrophic or biliary cirrhosis is rare in Calcutta, but a form of infantile biliary cirrhosis described by Gibbons of unknown origin is met with.

6. In Calcutta cirrhosis of the liver is so frequently associated with chronic dysentery, usually of the amœbic type, as to suggest that the fibrosis of the liver is secondary to the bowel ulceration.

7. Chronic inflammatory changes due to bacterial infection or toxic absorption through ulcers of the gastro-intestinal tract is also a likely cause of cirrhosis of the liver.

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8. Leucocytosis is common in the ordinary type of cirrhosis of the liver, a high degree being of very bad prognostic significance. On the other hand a leucopenia points to a cirrhosis being secondary to kala-azar.

ALBERT E. LOVE.

ITALY.

Giornale di Medicina Militare.

January, 1911.

47 *On Physical Aptitude for the Service of Aerial Navigation. By Nieddu-Semidei.

48 The Rapid Cure of Suppurating Inguinal Lymphadenitis by the Method of "Puncture-incision." By M. Virgallita.

49 The Graduations of Crural Hernia. By A. Perassi.

50 *On a Simple Means of Protection Against Diseases Contracted by Respiration Through the Nasal Cavities. By C. Sforza.

51 Contribution to the Study of Pneumothorax in Pulmonary Tuberculosis. By D. Balestra.

48. **Physical Aptitude for Aerial Navigation Service.**—The author discusses the influence of both the special movements of an airship and the medium in which it travels upon the physical and mental condition of the navigator. The motion affects principally the inner ear, and the hearing apparatus should be sound with not over-sensitive labyrinths. A person who suffers from sea-sickness or who feels distress from the rarefied air of high altitudes is manifestly unfit. Some favored persons have a marvelous sense of self-orientation, an instinct for appreciating direction and locality. Such a gift when combined with presence of mind, courage and a sound body should make a successful aviator. The physical and mental effects of high winds, fogs, great changes of temperature, etc., are also discussed.

50. **Simple Means of Protection Against Diseases Contracted by Respiration Through the Nasal Cavities.**— General Sforza recommends as a simple defense against the many diseases which may be acquired through the nasal passages, the use of loose pledgets of aseptic gauze in the nostrils. The packing should not be tight enough to force breathing through the mouth and the little strips of gauze may be renewed without trouble when soiled. The author thinks this simple precaution should prevent many cases of diphtheria, coryza, bronchial catarrh, tuberculosis, epidemic spinal-meningitis, and quite probably measles, scarlatina, and other infectious diseases.

W. D. MCCAW.

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RUSSIA.

Wojenno Medizinskij Journal, St. Petersburg.

December, 1910.

52 Two Cases of General Albinism. By E. S. Bonvech.
53 From the Clinic of the Krementschuo Lazaret. By L. S. Dobrowolski.
54 *A Case of Artificial Swelling of the Scrotum. B. K. F. Persson.
55 A Case of Malignant Neoplasm of the Skull. By L. N. Bluket and N. S. Drozdow.
56 On Appendicitis. W. S. Korotschanski.
57 *On Dressing Stations. By A. P. Njegodajew.
58 *On Pest Epidemics in Russia. By W. S. Klimenko.
59 Simulation of Blindness and Defective Vision. By A. G. Wassjutinski.

54. **Artificial Swelling of the Scrotum.**—Among the methods resorted to for the purpose of obtaining a premature discharge from the Russian Army or of being declared unfit for military service at the time of conscription, the creation of artificial tumors by the subcutaneous injection of paraffin seems quite a favorite. In this case the tumor was in the tunica (left half) but had no relation to the testicles or epidiymis. The soldier denied at first self-mutilation, agreed to operation and finally admitted to the hospital steward that he himself injected the paraffin "when asleep." The "tumor" was removed under local anesthesia. It weighed 38.5 grammes. Healing per primam. Patient returned to the service.

57. **On Dressing Stations.**—Too important to be abstracted in this column. A comprehensive review of the article will appear under "Reprints and Translations."

58. **On Pest Epidemics in Russia.**—Klimenko begins his earnest labor with a tabulated list of the number of plague victims in his country, covering the period from 1878 to 1910. The mortality is frightful. As an example in 1904 the Ural territory shows 416 patients with 416 deaths. The best figure is given for Odessa (1910), viz: 28 fatalities to 105 victims. The total number of victims during the 32 years was 2,754, of whom 2,487 died. Basing all his observations of the epidemics in the territory of the Ural, Klimenko establishes the following theses:

1. Almost all epidemics appeared in the second half of the year, principally in November and December, rarely in the summer and never in the spring.

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2. The first appearance of the disease was in children.

3. Complete eradication of the plague can be achieved only by a systematic fight against every outbreak and by measures to prevent new infections from the Orient.

4. Success can be achieved only if there be on hand competent medical personnel, not hampered by lack of funds. Suspected cases and fatal cases should be reported to the proper sanitary officials.

5. The struggle with plague by a personnel, temporarily detailed to the locality of the epidemic, and unfamiliar with local conditions, is costly and unsatisfactory. Such personnel usually reaches the place too late.

Medizinskija Pribawlenija k Morskomy Sborniko.

December, 1910.

60 *Account of the First Half of a Detail to Foreign Clinics. By A. D. Ozerow.

61 Review of the Scarlet Fever Epidemics in Port Emperor Alexander III in 1908-1909. Herzog.

62 *Minutes of the Sessions of the Society of Naval Physicians in Port Emperor Alexander III.

60. **Foreign Clinics.**—This is a lengthy review of surgeons and specialists and their clinical methods observed in Germany. The article naturally cannot be abstracted. Ozerow has visited German naval hospitals and the large university and private clinics. He reports his impressions without fear or favor. The article was begun in the preceding issue of the monthly medico-naval bulletin (special issue of the Morskiji Sborniko).

62. **Society of Naval Physicians.**—This naval bulletin yields about one-third of its space to the proceedings of diverse naval medical societies. In the future only abstracts of original addresses will be cited, and reference to the society meeting (date, locality, etc.), omitted. G. M. Blech.

SPAIN.

Revista de Sanidad Militar.

February, 1911.

63 Instructions for the Use of Salvasan or "606" in Military Hospitals.

64 Preparation of Diozidoamido-arsenobenzol, or "606."

65 Obituary. Juan Enrique Dumant. By P. Farreras.

W. D. McCaw.

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Reviews.

INEBRIETY. A Clinical Treatise on the Etiology, Symptomology, Neurosis, Psychosis and Treatment and the Medico-Legal Relations. By T. D. Crothers, M. D., Superintendent of Walnut Lodge Hospital, Hartford, Conn. Editor of the Journal of Inebriety, Author of Morphinism and Narcomania, Drug Habits and Their Treatment, etc., etc. Octavo of 365 pages. Harvey Publishing Company, Cincinnati, Ohio, 1911.

The author of the present work has been very prominent for many years as a student of the causes of inebriety, but more especially for his practical work in the sanitorium treatment of this condition. His experience has been so vast that he has done a service to the medical profession by embodying it in a book. This is most comprehensive in scope, discussing as it does inebriety from almost every point of view.

The volume should be read by every physician and attorney who is interested in the subject.

A MANUAL OF GYNAECOLOGY. By Thomas Watts Eden, M. D., C. M. Edin., F. R. C. P. Lond., F. R. C. S. Edin. Obstetric Physician with Charge of Out-Patients, and Lecturer on Midwifery and Gynaecology, Charing Cross Hospital; Surgeon to In-Patients, Chelsea Hospital for Women; Physician to In-Patients, Queen Charlotte's Lying-In Hospital, etc., etc. Octavo of 632 pages with 272 illustrations in the text. P. Blakiston's Son & Co., 1012 Walnut street, Philadelphia, Pa., 1911. Price, $5.00 net.

The object of the author of this book as announced in the preface is to provide for students and general practitioners a complete, but not exhaustive, account of the diseases of women in their pathological and clinical aspects. The manual is well and clearly written and is profusely and satisfactorily illustrated. In one or two instances, in the desire to cut out unnecessary matter, descriptions are rather too much curtailed. The British practice in respect to treatment does not, of course, always accord with that usually accepted in this country and evidence to this effect is afforded in the present volume. For the student, the comparatively small size of the book and its concise descriptions and clear illustrations should prove attractive.

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PLASTIC AND COSMETIC SURGERY. By Frederick Strange Kolle, M. D. Fellow of New York Academy of Medicine; Member of Deutsche Medezinische Gesellschaft, N. Y., Kings County Hospital Alumni Society, Authors' Committee American Health League, Physicians' Legislature League, etc.; Author of "The X-Rays; Their Production and Application," "Medico-Surgical Radiography," "Subcutaneous Hydrocarbon Protheses," etc. Octavo of 511 pages with one colored plate and five hundred and twenty-two illustrations in text. D. Appleton & Co., New York and London, 1911.

This is an elaborate treatise on a subject in which the literature is scanty and much scattered.

The chapter headings are as follows: Historical, requirements for operating, requirements during operation, preferred antiseptics, wound dressings, secondary antisepsis, anesthetics, principles of plastic surgery, blepharoplasty, otoplasty, cheiloplasty, stomatoplasty, meloplasty, subcutaneous hydrocarbon protheses, rhinoplasty, cosmetic rhinoplasty, electrolysis in dermotology, and case recording methods. These headings indicate that the more important subjects which might be included in plastic and cosmetic surgery have received attention and this impression is confirmed by reading the text. One or two admissions of methods which have been discussed at some length in recent literature are noted.

The illustrations are excellent, the book is comprehensive in scope, and the numerous descriptions of surgical proceedings are clearly written.

PRACTICAL DIETETICS; With Reference to Diet in Disease. By Alida Frances Pattee, Graduate, Department of Household Arts, State Normal School, Framingham, Mass.; Late Instructor in Dietetics, Bellevue Training School for Nurses, Bellevue Hospital, New York City; Former Instructor at Mount Sinai, Hahnemann and the Flower Hospital Training Schools for Nurses, New York City; Lakeside, St. Mary's, Trinity and Wisconsin Training Schools for Nurses, etc., etc. Sixth Edition Revised and Enlarged. Octavo of 527 pages. PPrice, $1.50. A. F. Pattee, Publisher, Mount Vernon, N. Y., 1910.

Former editions of this book have been favorably reviewed in these pages. The present edition is, however, much improved over previous ones, and should prove of the greatest value to anyone engaged in preparing food for the sick. The book is divided into three parts as follows: Part I, Principles of Nutrition and Food Preparation; Park II, Practical Application of Principles of Nutrition, and Part III, Hospital Dietaries—Diet in Disease—Diet in Special Conditions.

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Notable additions in this edition comprise statements of the total energy value of each recipe when this is practicable and a table of food values. Food principles have been re-classified to advantage, and the fundamental principles of nutrition are more fully discussed. In the introduction appear outlines showing the requirements in dietetics of State Boards of Examiners of Nurses, and the book has been rearranged to correspond with these requirements, thus aiding in arranging courses of study for candidates for examination.

MANUAL OF CYSTOSCOPY. By J. Bentley Squier, M. D., Professor of Genito-Urinary Surgery, New York Post-Graduate Medical School and Hospital, and Henry G. Bugbee, M. D., Instructor in Genito-Urinary Surgery, New York Post-Graduate Medical School and Hospital. Octavo of 117 pages. Price, $3.00 net. Paul B. Hoeber, Publisher, 69 East 59th street, New York City, 1911.

This is an excellent little book, and its teachings are eminently practical.

The following are the subjects treated: History of cystoscopy; cystoscopic examination, technique of the normal bladder; pictures of the normal bladder; pictures of the pathological bladder; ureteral catheterization; cystoscopy in the female; operative cystoscopes; photographic cystoscopes and observations upon cystoscopic diagnosis. The statements are clear, and concisely put, and the illustrations are notably good. One feature of the latter which should prove particularly valuable is that in many instances the exact position of the cystoscope is illustrated on one side of the page, while on the other is a colored plate showing exactly what appears in the field of vision.

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Editorial.

THE mobilization of a division of regular troops along the Rio Grande with headquarters at San Antonio, Tex., and the presence of American warships off both the east and west coasts of Mexico have given rise to endless speculation as to the purposes of the responsible authorities. These need not be discussed here, but it is thought it will be interesting to study briefly the effect of bringing so many troops together relative to its influence on the efficiency of the medical department.

It may be stated at the outset that no branch of the service is likely to receive more benefit than that department. Small garrisons afford little preparation for war to anyone, as the conditions which obtain therein are so totally foreign to those of serious warfare. In these communities the efficiency of the medical officer is largely determined by the skill which he manifests as a family physician. The medical department is of course not less anxious than other branches of the service that everyone connected with the military establishment shall have the very best professional service at all times. Just here is the important point. The primary purpose of any army is to render full value to its country in war. If it is not prepared to do this, however well it may perform its duties in peace, it is woefully lacking in real efficiency. What is true of the army as a whole is equally true of any part of it, as for example, the medical department. Without the training incident to service with large bodies of troops the medical department is most distinctly not in the position to afford the military establishment the best professional service at all times. The reasons for this are not far to seek. In small garrisons none of the medical department units is in being, even the regimental detachments on account of the press of other duties and for various other reasons do not have campaign training. Maneuvers have it is true been of educational advantage to the medical department as well as to other branches of the service, in some respects to a very great extent and in some to very little. So far as camp sanitation is concerned conditions

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are remarkably improved since the Spanish-American War, and this has been largely due to maneuver camps, which, alien as conditions have often been to those of war and false as conclusions from them might be, yet have developed an enthusiasm for good sanitation and effective methods, which should go far toward making any army which we may raise in war an efficient one. Conditions in other respects have not been so favorable from the medical department standpoint, however. Shortage in personnel and in transport have uniformly been responsible for this result. Never until two years ago at the camps for the instruction of medical officers of the organized militia had even one field hospital or ambulance company been assembled complete in all details, and this was the only occasion until the present one that any very serious attempt had been made in this direction. The imagination, useful as it is, falls very short when it is required to supply practically the whole medical department organization for a division or a larger body of troops. Moreover, the effect of having a few incomplete medical department organizations was that even the few actually present could not perform their part in the maneuvers with any degree of profit or satisfaction. Deficiency in transport, of course, increased the difficulty in this and other respects.

Now, for the first time, the medical department is to be completely organized and equipped for a division of troops, the number actually mobilized, and the field hospitals and ambulance companies pertaining thereto may be used as contemplated by the field service regulations. Besides the great educational value of this procedure, it will have a no less important effect in showing whether the organization and equipment of these medical department field units are as good as they can be made. It is not supposed, of course, that they will prove to be perfect in all respects and we want to know this now and not at some further time when mistakes may prove very costly.

A division, according to the standards of today, is not a great number of troops to mobilize. In fact, many nations could put many divisions fully equipped into the field at almost instant notice. On the other hand, so far as the needs of the front are concerned from the standpoint of the medical department, one division offers about the same opportunities as an army.

The line of communication presents different and very important problems, it is true, but our medical department is, at

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least, well equipped with evacuation and base hospitals and should be able to make a good showing in these directions if the opportunity offers.

At the beginning of previous wars, including the Spanish-American, the medical department has been too ill equipped to take advantage of opportunities for acquiring knowledge of efficient service in war. Now, besides the large number of regular medical officers who accompanied the troops to the south, the Army Medical School class will be graduated at once, and the young officers, as well as a considerable number of medical officers of the organized militia, will have an opportunity for practical training, which has never yet been afforded in our history till a war was well advanced.

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News of the Services.

Publication of the list of naval medical officers is postponed until next month on information received from the Bureau of Medicine and Surgery that changes are to be so numerous that the list if published now would be obsolete when the April journal appears.

Articles by members appearing elsewhere have been noted during the month as follows: The Control of Typhoid in the Army by Vaccination, by Major F. F. Russell, Medical Corps, U. S. Army; Chronic Influenza and Its Relation to Neuropathy, by First Lieutenant Glenn I. Jones, Medical Corps, U. S. Army; Disinfectants, Their Use and Application in the Prevention of Communicable Diseases, by Thomas B. McClintic, Passed Assistant Surgeon, U. S. Public Health and Marine-Hospital Service, and Prevention of Hemorrhage in Pulmonary Tuberculosis by the Administration of Autogenous Vaccines, by Roswell T. Pettit, B. S., Bacteriologist, Ottawa Tent Colony, Ottawa, Ill.

Major Henry Allers, Surgeon of the First Brigade, and member of Brigadier General Edward A. Campbell's staff, has twice been honored by promotion within the brief period of about eight months. At his home in Harrison, Friday, Major Allers was notified by the Adjutant General's Department that he had been appointed to be Deputy Surgeon General of the division, to succeed Lieutenant Colonel William J. Parker. Major Allers will hereafter rank as lieutenant colonel and will become a member of Major General Peter Farmer Wanser's divisional staff. The news of Major Allers' promotion will be pleasing to the officers and members of the First Regiment, in the Medical Department, of which organization he had served since 1888. Last June Major Allers relinquished his office as surgeon of the First Regiment to become surgeon of the First Brigade. Besides his friends in the First Regiment, Major Allers' military colleagues throughout the State will heartily approve of his promotion. Major Allers began his military career on July 25, 1888, at which time he was commissioned first lieutenant, following his appointment as assistant surgeon of the First Regiment. He held that office until March 23, 1892, when he was appointed medical officer, with rank of first lieutenant. On March 30, 1893, he was appointed battalion assistant surgeon, and in the following July he was appointed battalion and assistant surgeon, with rank of captain. He was made regimental surgeon and commissioned major on April 7, 1898, and then followed his promotion to brigade surgeon last June. He ranked as major and surgeon and served as such with the First Volunteer Regiment in the war with Spain.—*Newark Sunday Call, February 26, 1911.*

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The following on the subject of the Corinna Borden Keen Research Fellowship of Jefferson Medical College is published at the request of the dean of that institution: The accumulated income of this fund now amounts to $1,000. The Fellowship will be awarded by the trustees upon recommendation of the Faculty to a graduate of the Jefferson Medical College of not less than one, nor more than ten years' standing, upon condition that he shall spend at least one year in Europe, America or elsewhere, wherever he can obtain the best facilities for research in the line of work he shall select after consultation with the Faculty; and that he shall publish at least one paper embodying the results of his work as the 'Corinna Borden Keen Research Fellow of the Jefferson Medical College."

Captain Lloyd Le R. Krebs, Medical Corps, was honorably discharged from the service of the United States on March 7th, having failed to successfully pass his examination for promotion to the grade of Major.

Major Frederick A. Dale, Medical Corps, has reported for duty at Fort Crook, Nebraska.

Major Henry Page, Medical Corps, has been granted a three months' leave of absence, to take effect when he has been relieved from duty in the Philippine Islands, with permission to come home by the way of Europe.

1st Lieutenant George F. Campbell, Medical Reserve Corps, has been relieved from treatment at the Army and Navy General Hospital and returned to his station, Fort Wingate, New Mexico.

On March 6th orders were issued assembling a Maneuver Division at San Antonio, Texas. The entire medical personnel of this division is not yet known, but Lieutenant Colonel H. P. Birmingham, Medical Corps, is Chief Surgeon; Major Paul F. Straub, Medical Corps, is the Sanitary Inspector, and Major E. E. Persons, Medical Corps, is on duty in the office of the Chief Surgeon. Major Clarence J. Manly, Medical Corps, is the Chief Surgeon of the First Separate Brigade, consisting of three regiments of Coast Artillery, assembled at Galveston, Texas. Lieutenant Colonel E. B. Frick, Medical Corps, is the Chief Surgeon of the Brigade assembled at San Diego, California.

Captain William A. Duncan, Medical Corps, has reported at the Field Medical Supply Depot, Washington, D. C., for duty.

Major Joseph H. Ford, Medical Corps, and Major S. M. Waterhouse, Medical Corps, were appointed surgeons of the two provisional regiments of Coast Artillery, organized in the Department of the East.

Major C. J. Bartlett, Medical Corps, has returned from a two months' leave of absence, which he spent abroad.

At the February examinations the following candidates were successful: Dr. Omar H. Quade, Dr. Guy L. Qualls, Dr. Leopold Mitchell and Dr. Philip B. Connolly. Doctors Qualls, Connolly and Mitchell have been called into active service and assigned to duty as follows: Doctor Qualls, Jefferson Barracks, Missouri; Doctor Connolly, Fort Monroe, Virginia; Doctor Mitchell, Washington Barracks.

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has

Captain William A. Powell, Medical Corps, has reported for duty at the Presidio of San Francisco, California.

Colonel R. G. Ebert, Medical Corps, has reported at San Francisco, California, for duty as Chief Surgeon, Department of California.

Lieutenant Colonel Charles M. Gandy, Medical Corps; Lieutenant Wayne H. Crum, Medical Corps, and Lieutenant F. M. Wells, Medical Reserve Corps, sailed for the Philippines on the March 5th transport.

1st Lieutenant George W. Daywalt, Medical Reserve Corps, has been honorably discharged from the service.

Major C. C. Whitcomb, Medical Corps, has been assigned to duty as the Medical Supply Officer of the Maneuver Division, San Antonio, Texas.

The Army, Appropriation Bill, approved on March 3d, contained a paragraph reorganizing the Dental Corps and placing it on a commission basis. The dental surgeons now in the service are eligible for appointment as First Lieutenants in the Dental Corps, at once. Hereafter it will be necessary for dentists to serve in a satisfactory manner for three years as Acting Dental Surgeons before being placed on a commission basis in the Dental Corps. During the time they serve as Acting Dental Surgeons they will have the same status as Contract Dental Surgeons have at present. It is believed this organization will work greatly to the advantage of the dental service. It gives the Dental Surgeon a commission as First Lieutenant and gives him the same rights with reference to longevity pay and retirement as any other officer of the Army. The bill authorizes the employment of sixty (60) Dental Surgeons, and as many Acting Dental Surgeons as may be required up to one Dental Surgeon for each 1,000 enlisted strength of the Army.

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The Military Surgeon

Original Articles.

AUTHORS ALONE ARE RESPONSIBLE FOR THE OPINIONS EXPRESSED IN THEIR CONTRIBUTIONS.

AN OUTLINE OF THE ORGANIZATION OF THE MEDICAL DEPARTMENT OF THE JAPANESE NAVY.

By Surgeon E. S. Bogert, U. S. Navy.

PERSONNEL.

THE personnel of the medical department of the Japanese Navy comprises commissioned medical officers, commissioned pharmacists, and an enlisted corps of sick attendants.

The personnel of commissioned medical officers is divided into the following grades: Second Assistant Surgeon, First Assistant Surgeon, Surgeon, Staff Surgeon, Fleet Surgeon, Surgeon Inspector, Surgeon General (Director of Hosiptals), and the Surgeon General of the Navy. Promotion is by selection. The number in each grade is limited, and the prescribed minimum period of service in each grade is as follows: Second Assistant Surgeon one (1) year, First Assistant Surgeon two (2) years, Surgeon five (5) years, Staff Surgeon two (2) years, Fleet Surgeon two (2) years, and Surgeon Inspector two (2) years; but promotion generally occurs only after the following periods of service: Second Assistant Surgeon two (2) years, First Assistant

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Surgeon two (2) years, Surgeon five (5) years, Staff Surgeon four (4) years, Fleet Surgeon six (6) years and Surgeon Inspector six (6) years. Thus, the grade of Surgeon General may not be reached before a minimum period of service of fourteen (14) years, but in practice occurs in only the most exceptional instances before a period of service of twenty-five (25) years. Practically all Assistant Surgeons reach the grade of Surgeon, the period of service generally spent in the grades of Second and First Assistant Surgeon being three to four (3-4) years, but occasionally may be as much as five (5) years. After eleven years of service retirement on a percentage of active pay is possible. An age retirement in grade is provided for. Officers not reaching the grade specified at the age specified as follows being compulsorily placed on the retired list: Surgeon 42 years, Staff Surgeon 45 years, Fleet Surgeon 50 years, Surgeon-Inspector 55 years, Surgeon General 60 years.

Pharmacists are commissioned officers, entering the service by appointment after competitive examination. Pharmacists are divided into grades corresponding with those of the medical officers, except that the highest grade attainable is Surgeon General with the rank of captain. The Surgeon General of the Navy may not be appointed from this corps. This is a small corps, at present comprising only twenty officers. Pharmacists are not assigned to duty on board ships of the line, serving on shore duty and on hospital ships exclusively.

The enlisted personnel is divided into eight grades, three of which are petty officer grades. These grades correspond to the eight grades into which the enlisted personnel of the seaman and artificer branches are divided. The rates in this corps are: Fifth, Fourth, Third, Second and First Class Sick Attendants; Third, Second and First Class Sick Bay Steward. Two warrant grades exist. These warrant officers perform duty on shore and on hospital ships only, and are designated as Chief Sick Bay Steward.

No dental corps exists, although such a corps is favored.

No female nurse corps exists.

ADMINISTRATION.

Bureau of Medical Affairs.—The central organ for the administration of medical, surgical and sanitary affairs is the Bureau of Medical Affairs in the Department of the Navy. The offices of this Bureau are located in the Navy Department in

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Tokyo. The Bureau takes entire charge of medical and surgical affairs; sanitation for the entire naval service; diagnosis and origin in connection with all pension cases; all matters relating to the physique of naval men throughout the Navy; matters relating to hospital service; supply, storage and issue of all articles used in the medical department; and the training and instruction of all naval surgeons, pharmacists, and sick attendants. The Surgeon General of the Navy takes entire charge of the business of the Bureau under the instructions of the "Minister of the Navy." The official relation between the Minister of the Navy and the Bureau of Medical Affairs is direct, and thus tends to expedite the transaction of business, lessens "red tape" and does not introduce non-technical advice or opinion on technical matters. The Surgeon General of the Navy at present has the rank of Rear Admiral, but may attain the rank of vice-Admiral upon the completion of six years' service as Surgeon General of the Navy. As stated, the Surgeon General of the Navy receives his authority direct from the Minister of the Navy and takes general charge of the direction and supervision of the business of the Bureau. The commissioned staff attached to the Bureau consists of one Surgeon General, one Surgeon Inspector, on Fleet Surgeon, one Staff Surgeon and one Pharmacist. The business of the Bureau is divided into divisions under the charge of these officers.

Naval Stations.—At each Naval Station there exists the position of "Chief Surgeon of Naval Station." This position is held by the Chief of the naval hospital at that station. This officer is directly responsible to and subject to the Commander-in-Chief of the Naval Station, and takes direct charge of matters relating to the duties, service and training of medical officers, pharmacists and sick attendants; matters pertaining to the physique of all persons attached to the station; determination of diagnosis and origin of all pension cases; diagnosis and recommendation in all cases involving medical discharge from the Navy; medical treatment in connection with preparations for mobilization, such as vaccinations; sanitation in connection with station ships, cruising ships while at the station, buildings, clothing, provisions, water supply and drainage, and the direct control of the naval hospital. At the larger naval stations this position is held by an officer of the grade of Surgeon General, of whom there are at present four, two holding the rank of rear admiral and two the

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rank of captain. At secondary Naval Stations the position of Chief Surgeon is held by a Surgeon Inspector or Fleet Surgeon.

Afloat.—In each squadron, the position of "Squadron Surgeon" exists. This officer takes charge of all medical and sanitary affairs of the squadron under the instructions of the Commander-in-Chief of the squadron. This officer is attached to the staff of the Commander-in-Chief of the squadron, messes and is quartered in the Commander-in-Chief's mess, and does not act as senior medical officer of the flagship. When, for any reason, a "Squadron Surgeon" is not assigned to a squadron, the chief surgeon of the flagship acts as such. The prescribed complement of medical officers to the vessels of the Japanese Navy is as follows: A battle ship, three—The chief surgeon, who is of the grade of Fleet Surgeon, a Staff Surgeon or a Surgeon, and a Surgeon. First class cruisers; three—The chief surgeon, who is of the grade of Fleet Surgeon or Staff Surgeon, a Surgeon, and a First Assistant Surgeon or Second Assistant Surgeon. Second and third class cruisers; two—The chief surgeon, being of the grade of Staff Surgeon and a First or Second Assistant Surgeon. Despatch boat and gun boats; one—generally of the grade of Surgeon. The number of medical officers serving on board a ship is the same under peace and war conditions, so that there is no necessity for increase in their number on the outbreak of war. Thus, the organization and routine to which all become accustomed during peace times is not disturbed during war.

Naval Hospitals.—At each naval port here exists a naval hospital attached to the naval station at that port. As previously stated, the chief surgeon of this hospital is ex-officio the "Chief Surgeon of the Naval Station." A naval hospital assumes all medical treatment at that station; takes entire charge of the preparation, storage and issue of supplies for the medical department at that station; takes entire control of the training of sick attendants; and attends to sanitary inspections and disinfecions. The work of a naval hospital is divided into four divisions: "First," or "Surgical Division;" "Second," or "Medical Division;" "Division of Pharmacy;" and "Division of the Training Institute for Nurses." Both at the Sasebo and Maizuru Naval Hospitals disinfecting plants are established, which are organized as a fifth division. The personnel prescribed at a naval hospital is as follows:

Chief of Hospital—Surgeon General or Surgeon Inspector.

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Vice-Chief of Hospital—Surgeon Inspector or Fleet Surgeon.

Chief of First Division—Surgeon Inspector or Fleet Surgeon.

Chief of Second Division—Surgeon Inspector or Fleet Surgeon.

Chief of Training Institute—Surgeon Inspector or Fleet Surgeon.

Chief of Pnarmacy Division—Pharmacist.

Chief of Disinfecting Establishment (where existing)—Surgeon Inspector or Fleet Surgeon.

Of these, the Vice Chief of Hospital is not a separate detail, but is filled by the senior of the officers who are chiefs of divisions; thus, the Chief of the First Division, the Chief of the Second Division, the Chief of the Training Institute or the Chief of the Disinfecting Establishment may act as Vice Chief of Hospital. The administration of the affairs of the hospital proper is largely in the hands of the Vice Chief of Hospital, because the time of the Chief of Hospital is much occupied by his larger duties as Chief Surgeon of Naval Station. In addition to the chiefs of division, nine officers of the grades of Fleet Surgeon, Staff Surgeon and Surgeon and three Pharmacists are attached to the hospital. Of these, one Fleet Surgeon, one Staff Surgeon, one Surgeon and two or three Pharmacists are detailed as teachers of Training Institute for Nurses. Twenty-two petty officers of the hospital corps are assigned to each hospital. Besides those mentioned, certain warrant and non-commissioned officers of other than the medical department, such as machinists, carpenters, electricians, etc., are assigned to duty at each hospital. Differing from the organization afloat, it is expected and intended to increase this complement for hospitals in time of war.

Hospital Ships.—No hospital ships exist in the Japanese Navy at present. The building of specially designed ships is advocated, but no immediate steps toward the construction of such hospital ships have been taken. During the Russo-Japanese war, merchant steamers were borrowed and equipped as hospital ships for service with the fleet. The complement of these ships was a chief surgeon of the grade of Surgeon Inspector, six Surgeons, two Pharmacists, and some warrant and non-commissioned officers.

Battle Stations on Shipboard.—On each fighting ship, the establishment of at least two dressing stations is prescribed. On new battle ships the location and design of these stations are

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determined when the plans for the ship are laid down. The supplies for these two dressing stations are separately stored from the time the ship is put in commission. For transporting wounded on board ship during battle, an ambulance party is regularly organized and is drilled periodically by the medical officers of the ship. The personnel of this party is drawn from the members of the band, the servants and the paymaster's division. Paymasters and their clerks assist in handling the wounded, generally being employed in making the necessary notes for record of those injured and killed.

EDUCATION.

Officers.—For the purpose of educating naval surgeons, there exists in Tokyo a Naval Medical School. At this school newly appointed officers receive the necessary education and training preliminary to the performance of duty as naval surgeons, and naval surgeons who have been in service for some time receive advanced courses. Three classes of students receive courses at this school: I, students who have just entered the service; II, surgeons of six or seven years' seniority, ten every year, take an advanced course lasting one year; III, special students, who desire and are selected to take special courses, they must have been in the grade of surgeon for three years. Class I take a preliminary course considered necessary for their training prior to the performance of their duty as naval surgeons. The course for these students lasts for six months and includes instruction in naval hygiene, minor surgery, elementary bacteriology, Navy regulations, duties of naval officers and naval discipline. These students are required to live in the school dormitories with the idea that thus may military discipline and martial spirit be best inculcated. Class II take a general advanced course for one year. The courses of study prescribed for these students include: Naval surgery, naval hygiene, geography of diseases, medical chemistry, venereal and skin diseases, otorhinolaryngology, ophthalmology, science of X-Rays, bacteriology, practical surgical and medical work and English and German languages. Class III select to study one subject exclusively for one year with the intention to more or less specialize in that subject. In addition to this purely educational work, the sanitary examinations of food and clothing for the entire navy are made at this school. The personnel of this school is as follows:

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1 Principal of the grade of Surgeon General or Surgeon Inspector.

1 Adjutant of the grade of Staff Surgeon or Surgeon.

3 Directors of the grades of Staff Surgeon or Surgeon.

4 Instructors of the grades of Surgeon Inspector, Fleet Surgeon, Staff Surgeon, or Surgeon.

1 Instructor—Apothecary Inspector (corresponding to rank of Surgeon Inspector) or Chief Apothecary, 1st class (corresponding to rank of Fleet Surgeon).

1 Paymaster—Paymaster.

In addition to the above educational provisions, officers whose scholarship is especially excellent are ordered to study subjects selected by the authorities in either England or Germany.

Non-Commissioned Personnel.—The enlisted personnel receive their training in the institutes for training nurses attached to each naval hosqital. Two courses are given, "A" and "B." All the men receive course "B." After 3 or 4 years of service deserving men are selected to take course "A." This is an advanced course and those who complete it successfully receive certificates and are granted extra pay.

COMMENT.

In studying this organization, so evidentaly based on broad principles of military efficiency, many points present themselves as worthy of careful consideration. Considering this organization in comparison with that of our navy, and as the points appear in the above outline, it is noted under "Personnel," that there is a constant incentive toward efficiency on the part of the medical officers by reason of promotion by selection, together with a limitation upon too rapid promotion by reason of the provision for a minimum period of service in each grade. By applying the principle of promotion by selection to all the grades, and by the large number of grades, this incentive remains constant, and the race is not to the sprinter, but to the man with staying power. This rivalry toward efficiency is well fostered by the well-thought-out educational scheme, and the reward is assured in adequate rank and pay for service well done. Without the personal influence and opportunity which must necessarily often determine the selection of the Surgeon General of the Navy, an efficient officer may attain the rank, pay and emoluments of a rear

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admiral. The commissioned corps of Pharmacists has no exact parallel in our service. The division of the enlisted personnel into grades corresponding with the grades in the enlisted personnel of the seaman and artificer branches seems to be excellent. The increased number of grades provided insures graded and equal promotion.

The direct relation of the Bureau of Medical Affairs to the Minister of the Navy has self-evident advantages. In time of war, should any recommendations from this Bureau to the Minister seem to affect in any way military operations or military plans of campaign, the Minister refers the matter to the Naval General Staff for comment before acting thereon. In time of peace, the delay, increased red tape, and needless reference of matters having no military bearing to officers who are, or should be, occupied with strictly military matters are obviated.

The organization at Naval Stations is in every way preferable to the arrangement in effect in our service. The centralizing of all medical affairs at a naval station under the direction of one medical officer of rank and experience, who is directly responsible to the Commander-in-Chief of the Station, is admirable. In our service separate officers are maintained for a navy yard and the naval hospital attached to that yard, and officers are assigned by department orders to duty at the naval hospital, navy yard, receiving ship, recruiting office and perhaps marine barracks and special medical attendance. By the more elastic organization of the Japanese Navy, the medical officers at a station may be assigned where needed, reliefs may be immedately provided without reference to the Navy Department for doctors sick or absent, the Commander-in-Chief of the station is provided with one responsible adviser and executive for all medical affairs connected with the station, duplication of medical records is obviated, and an economy in medical department supplies results.

Afloat, the organization corresponds to that which has been recommended for our service, but which we have not attained as yet. The arrangement for quartering and messing a squadron surgeon with the Commander-in-Chief of the squadron provides for that officer in a manner suitable to the rank and length of service desirable for the performance of such duty; and his close association with the Commander-in-Chief enables him to relieve the admiral of all worry, care and planning as to the disposition of hospital ships and the evacuation of the ships of the line

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of dead and wounded after battle, as well as to best perform his duties as sanitary adviser in time of peace. Here, as in every particular concerning the wounded in a naval engagement one is impressed with the conviction that the Japanese have concluded, as one of the results of their experience in the Russo-Japanese war, that the prompt segregation of the dead and wounded from active combatants is a military necessity and that ships of the line must be evacuated of wounded immediately after an engagement. The arrangement by which cruising ships constantly have assigned to them in time of peace the number of medical officers which has been determined as necessary in time of war is worthy of our consideration. On the most modern battle ships the Japanese are said to be locating three instead of two dressing stations. With three medical officers assigned to each battle ship, and the oft published statement that as many dressing stations as possible are desired, this can be readily believed.

The educational scheme seems to have been planned on board lines and differs radically from our plan. The course given to officers on their entry into the service is limited to instruction in naval hygiene, the peculiarities of medical and surgical practice as applied to service conditions and equipment, instruction in the duties of officers and the inculcation of military spirit and discipline. In short, the course is planned solely to acquaint them with naval matters and to fit them for the performance of military duty. After six or seven years' service and after selection and promotion to the grade of surgeon, and when by reason of their service and absence from medical centers their knowledge may have become a bit rusty, they are given a complete advanced post-graduate course in medicine, surgery and allied branches. Later in their naval careers these officers are encouraged and ordered to pursue special courses of study at first at home, and then abroad for those who have proved themselves especially competent.

The education of the enlisted personnel also seems to be well planned. All take graded courses of instruction. The provision of training for the enlisted personnel at each naval hospital seems to be rational.

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EXPERIENCE OF THE ARMY WITH VACCINATION AS A PROPHYLACTIC AGAINST SMALLPOX.*

By John Van Rensselaer Hoff, A.M., M.D., LL.D., Colonel, Medical Corps, U. S. Army.

SMALLPOX, or variola, is an intensely infectious and fatal eruptive disease, presumably of parasitic origin, which in times past devasted even the most enlightened nations and threatened the existence of the human race.

Today this disease has practically ceased to manifest itself harmfully among well governed people, and is far more easily controlled than typhoid fever and other common affections.

How? By vaccination.

Vaccination is defined as inoculation with vaccine or the virus of cowpox; it consists in the introduction upon an abraded surface of the skin, usually of the upper arm, of a minute quantity of vaccine, which, if successfully done, causes vaccinia, a harmless affection, which immunizes against smallpox.

I need not trouble you with a detailed history of this beneficent discovery announced by Jenner in 1796. This, as well as the fact that the remedy was brought to this country by Dr. Waterhouse, of Boston, in 1800, is well known to you.

You will recall that vaccination was presented to the particular attention of our countrymen by Thomas Jefferson, then President of the United States, who wrote Jenner that he had "erased from the calendar of human afflictions one of its greatest." Moreover, the fact must be deeply impressed upon your minds that with the extension of the practice of vaccination throughout the civilized world, smallpox ceased its ravages among enlightened people.

What were these ravages?

Not a decade passed in the 17th and 18th centuries without the occurrence of devastating epidemics of smallpox in Europe. In England, from seven to nine per cent. of all deaths were attributed to smallpox and it ranked next after tuberculosis in destructiveness.

*Read at a meeting of the Medical Society, State of New York, at Albany, April 18th, 1911.

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In Berlin, one-twelfth of all deaths were from smallpox; in France, 30,000 died annually from this cause.

In 1721, Boston, Mass., with a population of about 11,000, had 5,989 cases of smallpox with 850 deaths. In 1730 there were 4,000 cases and 509 deaths. Everywhere the same story.

Previous to Jenner's discovery, smallpox, like tuberculosis then and today, was endemic in all countries and had a mortality of ten per cent.; it never was wholly absent and periodically became a great epidemic, when its death toll reached fifty per cent. "Countless mortals who escaped death were maimed for life. Of new born children, one-third died of smallpox before their first year, and one-half before the fifth year. There was no family which had not heavy losses to deplore," and no place which escaped.

There was then no adequate means of prevention, no remedy; and mankind seemed doomed to annihilation by this terrible scourge. The fact that the inoculation of the material from the smallpox pustule itself produced a milder attack of the disease was known and practiced before the discovery of the immunizing power of the cowpox, but the practice only served to propagate and disseminate the disease and ceased to be practiced shortly after the introduction and practice of vaccination.

Following vaccination, child mortality from smallpox stopped and among adults, wherever efficient vaccination obtains, the name variola no longer cuts any figure in mortality tables.

In twenty-two nations where vital statistics were kept, the annual mortality from smallpox of 2,800 per million in the 18th century was reduced in the 19th to 280, after the introduction of vaccination.

But the toll demanded by variola from the enlightened of the earth is ancient history, and some there are today who think that vaccination, which abolished it, is a fetish, a possibly valuable remedy once but of no value now; that smallpox has run out and that compulsory vaccination against a hypothetical disease is an infringement upon the rights of the individual and of no value to the community.

How far this is from the truth is easily demonstrated by the current activity of the disease among the unvaccinated.

Twenty years ago 25,000 people died in one year of smallpox in Guatemala; there was no compulsory vaccination there; it was the Paradise of anti-vaccinationists. Recently the disease be-

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came so rife that the authorities vaccinated the people *en bloc*, since which smallpox has ceased to manifest itself in that country.

In the Medical Record of February 25, 1911, one reads:

"Recent reports indicate that in Panama, Honduras and Costa Rica, where vaccination is compulsory, smallpox is conspicuous by its absence and when an occasional case occurs, it is of a mild type. On the other hand, in Chili, in which vaccination is not compulsory, and in San Salvador, where the law of compulsory vaccination has not been enforced, the disease has been very prevalent and fatal. During the last year, there were in one infectious disease hospital, that of San José, Chile, 3,800 cases, with 3,071 deaths."

It is, however, not necessary for us to seek confirmation of the continued existence of smallpox, or of the dangers to the unvaccinated from this disease, through the experience of other peoples.

Driven by fate we, as a nation, have ventured without our shores and, in recent years, accumulated our full share of the white man's burden.

It was my fortune, in the Autumn of 1898, to be assigned to duty as Chief Surgeon of the Department of Porto Rico. Smallpox was epidemic, neighboring countries were quarantining against the Island, and the success of our first effort in military government was hanging in the balance.

This disease had never been absent from Porto Rico during the Spanish régime. The average number of deaths per annum for the ten years previous to our occupation was 621, the greatest number 2,362, occuring in 1890 and the least 11 in 1893. The Spaniards had vaccination laws, but they were more honored in the breach than the observance.

The situation was grave and there was but one thing to do, vaccinate the entire population, a million people.

The vaccine virus sent from home to vaccinate the troops was inert, due doubtless to high temperature and other factors, and the problem to solve was not alone to immunize the people, but to produce the immunizing agent as well.

We organized a vaccine farm, produced the virus and in three months performed 860,000 vaccinations. In 1899, 242 deaths from smallpox were reported, all of which occured before the conclusion of the anti-smallpox campaign. After that, none for several years.

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I shall not dwell upon the details of this work, the first big sanitary undertaking of our Government in the tropics. It loomed large then but since has been overshadowed by so many greater things that there would be no occasion to mention it except to illustrate the benefits of vaccination.

But primary vaccination alone does not always confer immunity to smallpox, even though it modifies the severity of the disease and the protection conferred diminishes gradually during the succeeding years, until about the seventh when it usually ceases.

Revaccination is the necessary complement of vaccination and must be practiced if the immunity to smallpox is to be maintained.

Of this, the Governor of Porto Rico reported in 1907, as follows: "Prior to American occupation the greatest scourge of the Island was smallpox. Under the military government there was a general vaccination, and since that time there have been no deaths on the Islands from this disease. This, however, was seven years ago, and I fear that the effect of the vaccination is wearing off, as during the past year there have been little outbreaks of varioloid, in mild form, in some municipalities. It is therefore time that another general vaccination was held."

In Cuba, our experience was almost identical. In Havana variola was likewise always present, 3,123 deaths being caused by it during the eight years immediately preceding our occupation; in the whole Island the average annual death rate for thirty years being two per thousand. In 1899 there was a general vaccination of the population and but three deaths from smallpox occured during the seven succeeding years, two of which were in imported cases.

In the outlying provinces, smallpox raged early in 1899; hundreds of cases were collected into isolation hospitals and general vaccination instituted, with the result that the disease disappeared.

It is interesting to note that not a single case of smallpox occurred in the carefully vaccinated regiment of U. S. troops which furnished the guards for these lazarettos.

Our experience with smallpox in the Philippines has been, and continues to be, interesting. It is no small problem to sanitate eight millions of semi-civilized and savage people, inhabitating scores of islands with the aggregate area of a continent.

A very recent report on vaccination in the Philippines, states that smallpox exists there among those who escape or avoid vac-

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cination, but the vaccinated remain immune though thrown into contact with the infection.

This report, made by Dr. Olsen, Public Health and Marine-Hospital Service, is based on the reports of the Director of Health, Philippine Islands, and is most interesting and convincing as to the value of successful vaccination in protecting against smallpox. He says the consensus of opinion of the district physicians in the Philippines is that the value of the procedure can not be controverted, and "No successfully vaccinated person need fear contact with the most malignant cases of smallpox."

Dr. Olsen lay stress upon the well known fact that while vaccination immunizes, the duration of the immunity can not be determined and, as previously stated, periodic revaccination is desirable. We know that even an attack of smallpox is not a guarantee against a subsequent attack. I have seen successful vaccination in subjects deeply pitted by variola, and some people are so sensitive to the infection that they take the disease every time they come in contact with it. But these are the exceptions to the rule that an attack of smallpox, or successful vaccination and revaccination, immunizes against this disease.

In San Lazaro Hospital (for infectious diseases), Manila, the rule of yearly revaccination obtains with perfect record of immunity, except in one case. An American nurse contracted smallpox while on duty in the contagious wards. Upon investigation, she admitted having intentionally nullified her vaccination by washing off the virus with alcohol.

Great care is taken in preparing the virus in the Government laboratories there to avoid any possibility of contamination, while the operation of vaccination is done under modern surgical standards, at public cost. An American physician who has supervised the performance of over a million vaccinations on natives, states he never saw a bad arm. That bad arms do sometimes result is not to be denied but such are almost inevitably chargeable to the vaccinatees rather than to the vaccine or vaccinator.

Vaccination is voluntary in the archipelago and there are anti-vaccinationists there as well as elsewhere. In a certain town in Cebu the belief prevailed that the virus was poison and would surely kill. Upon inquiry it was found that the conviction was based upon the fact that the vaccine was put up in yellow colored bottles instead of white, as formerly.

The opposition in one province caused the withdrawal of

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vaccinators, with a resulting considerable increase of smallpox. The thinking people of the community, struck by the fact that the vaccinated escaped the disease, soon petitioned the authorities to continue vaccinating.

Nine million vaccinations have been done in the Philippines since we went there. Of these, probably not more than half were successful. So it is reasonable to assume that about half the population of the archipelago are now immune to smallpox. Let us consider the results of the campaign.

Shortly before the American occupation, an epidemic of smallpox occurred in Manila which destroyed the people at the rate of 400 per week. Only once since our arrival, when a policy of persistent and efficient vaccination was instituted, has the number of deaths, annually, from smallpox exceeded thirty, and no death from this cause has occurred there since June 15, 1909.

The same result has followed vaccination elsewhere in the archipelago. In 1906 systematic vaccination was carried out in Pampanga. Before that, deaths from smallpox numbered about 450 annually. There has been no death there from this cause since 1908. In Cebu, previous to 1905, the annual deaths from smallpox numbered between three and four thousand, which were reduced after vaccination to 84 deaths in 1908.

The provinces near Manila formerly paid toll to lack of vaccination to the amount of 6,000 lives annually. Since systematic vaccination in 1907, not a death from this cause was reported.

From all sides come evidences of the efficiency of vaccination to prevent the ravages of smallpox, not only in the destruction of life but in the terrible disfigurement of its victims.

Dr. Olsen, in concluding his interesting and informing report, writes: "One can not but be impressed with the prodigious differences between an insignificant scar on the arm, all that vaccination leaves, and the suffering, disfigurement and deaths which follow smallpox.

It is to be regretted that smallpox continues to cut any figure in the mortality statistics of our own country. But, unfortunately and unnecessarily, it does.

In 1899 there were 11,136 cases reported with 553 deaths; in 1900, 20,362 cases with 819 deaths, and in 1901, 64,630 cases with 1,640 deaths. The death rate per hundred thousand 1901-5 was 3.4; in 1904 it was 2.1; 1905, 0.9; 1906, 0.2; 1907, the same. In 1908, 35; 174 cases were reported in the registration area, about

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half the continental area, with 76 deaths; in 1909, 21,021 cases with 94 deaths, and in 1910, 27,176 cases with 384 deaths. To March 10th of the current year, 5,818 cases were reported, of which 30 died.

By reference to the subjoined table,* it will be observed that the only countries showing death rates from smallpox greater than that of the United States, registered area, for the quinquennial period, 1901-05, were Spain, Belgium and Italy. Since then, the only country with continuing high death rate is Spain.

Country.	Average 1901-5.	1904.	1905.	1906.	1907.
United States	3.4	2.1	0.9	0.2	0.2
Austria	0.1	0.1	0.1	....	....
Belgium	9.9	9.3	3.4	0.6	....
Ceylon	1.3	0.1	2.9	1.8	0.7
Chile	....	....	261.9	....	....
Finland	1.9	1.3	0.6	1.0	....
German Empire	Less	than	one	tenth.	
Hungary	2.3	2.2	2.3	1.1	0.7
Italy	9.4	9.3	1.4	0.5	1.3
Japan	0.1	0.3	0.1	....	....
Netherlands	0.2	0.2	0.2	0.1	0.1
Norway	0.1	....	0.3	....	....
Ontario	0.4	0.1	0.1	0.2	....
Roumania	0.1	0.3	....	....	....
Spain	22.3	14.9	14.2	22.4	16.6
Switzerland	0.5	0.1	1.0	0.4	....
United Kingdom	2.3	1.7	0.3	0.1	....

This is current history, not that of the eighteenth century, and it certainly does not indicate that smallpox is intrinsically any less potent for evil than it was before Jenner demonstrated his beneficent discovery.

So much for variola *about* our Army, let us consider it within the Army.

According to modern standards the primary function of the Sanitary Department of an Army is to put and keep the largest number of efficient rifles on the firing line.

*The following table, taken from the U. S. Census reports, gives the death rate of smallpox, per 100,000 of population in the countries and for the years mentioned:

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This involves the exclusion from among the men who are to be behind the guns, of all physically unfit, at time of enlistment and the keeping of those enlisted in the best possible fighting trim, physically.

These desiderata are now axiomatic in armies and no opportunity is lost to promote the health of soldiers, as a *sine qua non* to fighting efficiency.

As a logical result, sanitation, which had its beginning and development in armies, recently attained its greatest accomplishments at the hands of military sanitarians.

The growth of the sanitary art amongst the people is slow, and when nations have been indifferent to the matter its status in armies has in past times fallen even below that in civil communities.

It might be supposed that the death rate among soldiers, presumably carefully selected men, would be considerably less than among civilians of the same age, the injuries to the industrial army being more than an offset to battle casualties. Formerly, before the true function of the sanitary department was recognized, this was not the case, the "expectancy" of the civilian being twice that of the soldier. But during the last third of the 19th century, with occasional exceptions, there was a notable change in this direction, e. g., the death rate in Prussia being 3 per thousand (1.8 in 1907) for the soldier to 6 for the civilian; in France, 8 (4 in 1907) to 11; and with us it is now 4.84 for the Army to 7 per thousand for the civilian population.

There are numerous reasons for this marked decrease in military mortality, among them being the more careful selection of the recruit, a better kuowledge of the scientific care of troops, and the consequent generally improved condition of the soldier's manner of life in peace; the lessened mortality of the battle field since the introduction of arms of precision, etc. In all of these advances, the United States Army has participated, and it is believed that a careful study and comparison of military statistics of different armies will demonstrate that we are reaching towards the best military hygienic standards.

I wish to remark here that the standards of our Army, in any direction, can not be much higher than the standards of the people, from whence it springs, but that we do demand and maintain a higher health standard in the regular Army can not be gainsaid.

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Why is this? Because the military authorities accept and practice the means of protecting the health of our soldiers which experience has taught are effective. Moreover, while receptive to advances in preventive medicine, they are withal conservative and do not subject their valuable fighting material to unwarranted experiment, either by commission or omission.

Hence it was that a generation passed before vaccination was made compulsory in armies. A generation in which the immunizing value of vaccination was conclusively proven.

Since then, the experience of nearly a hundred years with this remedy has taught the value of vaccination and revaccination in promoting the physical efficiency of soldiers, and certainly no army would now forego this effective means of excluding from its ranks so devastating a disease as smallpox. With efficient virus at his command no medical officer today has any dread of an infection formerly the opprobrium of the profession.

The United States Army Regulations of 1834 contain the following: "It will also be the duty of the examining surgeon to ascertain whether the recruit has had the variolus or vaccine affection; and, if not, to see that he be vaccinated immediately after enlistment, or as soon thereafter as practicable."

Since then vaccination and revaccination have always been practiced, and today every applicant for enlistment must be vaccinated immediately after acceptance. Then, when he reaches his first post, he is examined, and if there is not unmistakable evidence that the vaccination was successful, the operation must immediately be performed again. Whenever detailed for over-sea service the operation is repeated; so that our Army generally is immune to smallpox. We must not forget, however, that the immunity is not absolute and that a negligible percentage is susceptible to infection.

But whenever we have had occasion to mobilize volunteers, smallpox has always found its way into the army, because our civil population is not thoroughly protected by vaccination and revaccination.

Of course, before the discovery of the preventive power of cowpox, variola prevailed generally in armies, as it did among civilians, and campaigns have come to naught because of it. Our expedition against Canada, during the war of the Revolution, failed, because of the prevalence of smallpox among the troops. Nearly 20,000 cases were reported during the Civil War, in our Army of about two million and a half, of which one-third died.

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The Confederate Army of Northern Virginia alone in little more than a year had 2,513 cases, of which 1,020 died. On the other hand, the German Army, in the Franco-Prussian War, a million strong, lost but 278 from this disease. This nation is proverbial for the strictness of its present compulsory vaccination law and the thoroughness with which the operation is done.

The French learned their lesson with 23,000 deaths from smallpox during that war, and since have instituted a vigorous system of vaccination, which has resulted in practically eliminating smallpox, the deaths in 1907 being at the rate of three in a hundred thousand.

Kitasato remarks of the Japanese army, "Our army engaged in both wars in Corea and Manchuria, where smallpox is endemic, and therefore the soldiers were constantly exposed to the danger of contamination, the more so when the unhealthy way of living which is a necessary concomitant of war is taken into account. However, the Japanese authorities took care to have every soldier who went to the seat of war vaccinated, and the happy result was that in an army consisting of not less than a million of men, the following small number of cases of smallpox appeared: Chino-Japanese War, 155 cases, 34 deaths; Russo-Japanese War, 362 cases, 35 deaths. As the total number of men engaged in both wars is not yet made known the rate of contamination and the death rate can not be accurately stated; however, we get from these approximate figures some notion as to the paucity of the cases. The results are equal to, if not better than those of the Prussian army during the war of 1870."

In summing up his article on vaccination in Japan, Kitasato concludes, "The anti-vaccinationists are like those who would deny the benefit of sunshine. It gives them every kind of joy and happiness and yet they are so familiar with it that they are not aware of its good. They would come to know the vast protective power of vaccination had they once experienced the terrible outbreaks of smallpox in their communities in which thousands on thousands fall victims, while the vaccinated ones go freely through the epidemic without the least danger of contagion."

The official vital statistics of the Russian Army, to July 14, 1905, given me in Manchuria, October 2d, 1905, by the Russian military authorities, included 209 cases of variola, of which 12 died. As the army numbered considerably over a million it goes without saying that its mortality from smallpox was negligible.

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In our Army, 1840-59, there were 134 cases of variola, of which 15 died, the aggregate strength being 1187,144. From 1885-97 there occurred but six cases. Then came the Spanish-American War which necessitated the enlistment of large numbers of unprotected civilians upon whom vaccination, if done at all, was ill done, with the result that the death rate from smallpox advanced rapidly.

Munson writes, "Among the volunteers who served in the Philippines in 1898, the admission rate for variola was 9.60 per thousand, twice that for the regulars, while the death rate for volunteers was 3.36 against 1 for regulars. The rate for the entire army, the strength of which approximated 275,000, was .67 per thousand.

The following table shows the movement of smallpox among our troops in the Philippines and China, 1898--1908:

Year.	No. of Troops.	Cases.	Ratio per thousand.	Deaths.	Ratio of deaths per thousand.
1898	2,908	76	7.67	21	2.12
1899	39,280	267	6.80	78	1.69*
1900	66,549	246	3.68	113	1.69
1901	59,536	85	1.43	37	.62
1902	37,768	60	1.67	12	.32
1903	23,818	27	1.13	3	.13
1904	11,996	4	.33	2	.17
1905	11,057	3	.27	0	.00
1906	12,622	3	.24	1	.09
1907	11,712	1	.09	0	.00
1908	12,136	2	.17	0	.00

From 1898 to 1902, the forces "included a number of volunteer regiments in which it was difficult to enforce a thorough vaccination." Moreover, at first it was almost impossible to obtain a potent virus and this was not wholly overcome until vaccine farms were established in Cuba and the Philippines, as well as

*In January, 1899, at Camp Columbia, near Havana, Cuba, the men of the 161st Indiana erected a monument of coral rock and concrete to the memory of six men who died from smallpox. The 2nd Illinois brigaded with them, and next in the line erected, a similar monument a little larger, a little higher, and with a little more ornamentation. When the Colonel of the 161st asked the Colonel of the 2nd the reason for this work, he said, "We erected our monument in honor of our six men who died from smallpox." The other Colonel replied, "And we erected ours because we had no smallpox."

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Porto Rico. Most of the regulars had been immunized by previous thorough vaccination and revaccination, and only the recruits were unprotected, because of impotent virus, while, on the other hand, most of the volunteers, never before vaccinated or certainly not revaccinated, though generally vaccinated after enlistment, were not thoroughly immunized.

In this connection it might be well to call attention to the fact that during the ten years above mentioned, vaccinia sufficiently severe to require excuse from duty prevailed at the rate of 37 per thousand. This disease, as you all know, is usually of little importance, has no relation to smallpox and its active symptoms disappear spontaneously in a few days; it is the direct result of successful vaccination.

It, however, goes without saying that the wounds of vaccination must be protected as must any other wound or else they may, in like manner, become infected. Of vaccinia, Munson says: "As vaccination on the arm often renders it inconvenient for recruits to drill or perform hard labor for a few days, it is customary to excuse such men when there is evidence of special inflamatory action, from the performance of a part or the whole of their duty. A large proportion of such cases receive no special treatment and are carried upon sick report as being sick in quarters." But being on sick report, they are necessarily included in the vital statistics of our Army.

The admission rate for vaccinia has always cut something of a figure in our military statistics, being with us, from 1886-95 nearly 34 per thousand, though the constant nonefficiency rate was but one. With the enrollment of volunteers in 1898 the rate increased somewhat and altogether seven deaths were reported as due to septicemia.

This, though regrettable, is not too great a price to pay for the protection of our troops from smallpox, which, before the discovery of vaccination had decimated armies, but was unnecessary had the proper technique in the operation been observed. The title vaccinia does not appear in international vital statistics of armies.

I am impressed with the idea that the operation of vaccination is generally ill done in our country, and I regret to confess that it is not up to the highest standard in our service, certainly so if the German regulations are regarded as necessary. We of the Army make up for our shortcomings in primary vaccination by

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repeated revaccination, but I fear that this is not generally practiced among our civilians.

It is not to be denied "that among vaccinated persons infected with smallpox the danger of the disease is chiefly determined by the character or quality of the vaccination." The fatality from smallpox among the properly vaccinated is but 5 in a thousand cases of the disease, whereas in the ill-vaccinated it is often 30 times greater.

The hurry and turmoil of mobilization, the lack of proper facilities, the impotence of the virus, the unskillfulness of unaccustomed operators, the carelessness of the subjects, all add to the difficulties of an operation, which should be done under strict aseptic precautions, both as to surface, instruments and operators, and the wounds should be protected against subsequent infection.

The technique of this operation is not negligible, though in active service sometimes neglected, nor do we always remember that in all primary vaccinations at least three separate insertions of virus should be made to obtain a total area of vesiculation of not less than one-half square inch. Moreover, if the first attempt is unsuccessful it should be repeated at short intervals until success follows, or there is reasonable certainty that the subject is immune. Is this the rule in our civil practice?

Secondary vaccinations may not demand multiple insertions, which is our excuse, as army vaccinations are of adults whom, it is presumed, have been vaccinated in infancy, an assumption not always justified by the facts. It is therefore safer to make three insertions.

All our wars have taught us that the mobilization of our military resources, the able-bodied citizens between the ages of 18 and 45 years, promotes the incurrence of smallpox in our armies, and all our experience has shown that efficient vaccination, revaccination and isolation absolutely control it.

We of the Medical Department, as promoters of the fighting efficiency of the troops, would be loath to return to conditions under which one-tenth of mankind died of smallpox, which immobilized armies, up to the beginning of the Nineteenth Century, but which ceased then with the application of Jenner's beneficent discovery and, since, have been effectually controlled by one thing, vaccination.

In spite of all these facts, somebody has asked, "Does vaccina-

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tion really grant immunity from or lessen the severity of smallpox? Rather, is not the gradual disappearance of this infection due to isolation* and sanitation?"

The answer is obvious. A century and more ago, tuberculosis and smallpox shared almost equally the unenviable reputation of being the most potent causes of mortality in the human race. Today tuberculosis maintains its evil reputation, but, among enlightened people, the mortality from smallpox is negligible.

Sanitary standards and practice have measurably advanced since 1797, but they have not yet greatly changed the mortality rate for tuberculosis, why should they have so marvelously affected that for smallpox?

They have not, and we are forced to the conclusion that to vaccination and vaccination alone, are we indebted for our power to control this formerly devastating and deadly infection. "The great blessings of vaccination are bought for nothing, still they are bought at a very trifling cost."

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*Chapin states, regarding isolation, that "smallpox is less likely to escape detection than is any other disease. Yet epidemics grow in the face of the most rigid isolation. Unrecognized cases, even in this disease, are so numerous that the isolation of the recognized cases often seems to be a complete failure. The State Board of Health of Minnesota realizing this, has had the boldness to advise that no attempt be made to isolate and that entire reliance be placed on vaccination. It was hoped that this would lead to more complete vaccination. There has been no alarming increase in smallpox in Minnesota."

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SOME OBSERVATIONS IN NATURAL IMMUNIZATIONS VERSUS ARTIFICIAL VACCINE THERAPY.*

By Major Harlan Shoemaker, A. B., M. D., Medical Corps, N. G. Pennsylvania.

IT is entirely proper that this subject of immunity produced by bacterial vaccination should be brought before the Association of Military Surgeons for discussion. The earliest experiment in immunity was conducted by Pfeifer—a surgeon in the German Army; while Wright of the Royal Army Medical Corps, England, has done more than any other man, toward popularizing these fundamental principles evolved by Pfeifer.

However, this entire method of immunization has recently been assailed so severely by one of the leading pathologists of the western hemisphere, if not of the world, in a paper read May 4, 1910 at Washington, D. C., before the Association of American Physicians, that to the average man, who is somewhat conservative in matters pertaining to advanced therapy, there must be some hesitancy as to what can be done safely in the use of bacterial vaccines.

Had I less experience with vaccines and read Prof. Adami's paper, I should certainly hesitate to use them.

Certain observations of natural phenomena coupled with laboratory findings, which I am about to relate, make me realize that Prof. Adami is entirely wrong, and that bacterial vaccines in the hands of the average doctor can be used with impunity.

Artificial Immunity.—The limits in its production vary on the one hand from perfect recovery to a state recently termed anaphalyxis. In other words, one might be so unfortunate as to find a patient in such a state that a little added impetus from a needle would push the individual beyond the power of recovery. Anaphalyxis in a patient can be nicely compared to the sudden onslaught of the fulminating attack of any disease—hemorrhagic variole, malignant scarlatina, hemorrhagic diphtheria, or the algid type of cholera. Patients dying of these types of infection present the same symptoms as those produced in the rabbit when its powers of resistance have been suddenly overwhelmed, to wit,

*Read at the 19th Annual Meeting.

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great restlessness, great hyperesthesia or irritability, terminating in death by air hunger, or muscular rigor.

How nearly the practical application of bacterial vaccines approaches such a frightful condition, I shall endeavor to illustrate by a few well chosen cases, which I know can be multiplied by you to any proportion. Furthermore, the very safe margin of difference in intensity of reaction between the production of an artificial immunity and that produced by Nature when she attempts the vaccination of the system against disease, will make you forget the terrors of anaphalyxis and the supersensitive judgment of the laboratory man. It was the expression of these opinions which forced the discontinuance of inoculation in the British Army, and drove Wright to the refuge of a Public Hospital. His theories and practice still obtain.

Artificial immunity medically considered, is of relatively slight importance because the discomfort is not great, and the reaction is of short duration. Artificial immunity surgically considered, is of relatively less importance than the medical aspect. However, active interference of the local tumefaction only intensifies the reaction, which may then be placed upon a level with natural immunization.

Case I.—A young man, whose arm was infected with anthrax, was taken to a hospital where Amercia's most eminent surgeons made long incisions from the fingers to the shoulder. The patient eventually recovered. However, I leave you to draw your own conclusions as to the relative severity of inoculation of living germs plus the most radical surgical interference, and the rather tame process of adding a few million dead germs in the hopes of trading profitably upon the vitality of your patient in order that the little spark of resistance remaining, may become sufficient.

What is Nature's methods of establishing immunity? Nature generally, though not always, selects that great storehouse of immunity —containing subsance, the skin, and when forced to extreme limits, works at a red heat, destroying millions of leucocytes, while a great quantity of that substance, the papillary layer of the skin, so high in amboceptor, is consumed. Only the cicatrix is left to tell of the operations in this laboratory. This process of vaccination is continuously in action on a large or small scale. So long as humanity lives on a bacterial food supply—I doubt, however, if it could live without it—nature must always be busy immunizing and re-immunizing against this continuous action of bacteria.

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Nature is more limited in her attempts at immunization in surgical cases than in medical cases, as a mechanical obstacle presents itself, which the surgeon must remove, besides the fact that a number of such infections seldom reach a site where sufficient immune substance can be produced, or, on the other hand, if vaccination is produced in such a site, the reaction is often too feeble to render immunity successful.

A good surgeon does not use such gentle means as the introduction of a few hundred million dead germs into the system—he very skillfully opens the avenues for the absorption of many millions of the living germs, with infinitely better results. Some may point out our deficiencies in those cases whose vitality we think sufficient to take care of a minimum infection which cannot be removed, or they may accuse us of voluntarily closing a drainage temporarily established for operative purposes; nevertheless, surgery stands upon what it has done, and not upon what it has failed to do.

Nature's method might be more generally imitated—that is, the inoculation of living germs into the system for the purpose of immunity—were it not for one contraindication. We all know that prolonged suppuration in the system, perhaps I could better say bacterial action, is most destructive to kidney substance. Bacteria, or the toxic products arising from their activity, including cell katabolism, are invariably attended by albuminurias with true kidney inflammation. This is the one great objection to immunization against cholera by the Hafkine method of living cultures and, to my mind, a similar objection to the endeavor of the Williams-Webb attempts toward immunity in tuberculosis. Hence more evidence is concretely presented in favor of the relative safety in the use of killed cultures of bacteria as a vaccine. The short duration of the reaction cannot injure a vital organ.

The following cases will illustrate in a negative way again this vast margin of safety in the use of bacterial vaccines. The cases do not represent cures by bacterial vaccines. Had such a sequence of events taken place, these observations could never have been drawn. The cases controvert a point which has been raised. It is right and safe to add something to a system apparently overwhelmed or struggling under the ill effects of this same something. Before I go further let me call your attention to one fact: there are two sides to this balance, and in the killing of the cultures the residue is aimed at the immune side of the balance. That nature

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eventually arrives at the same end, through more heroic means, amply justifies any attempts which we may make in a similar direction.

Case II. Male, 23 years, who had had an extensive sycosis of the face, of two years' duration. Condition was treated successfully by a skin specialist, with X-ray and ultra violet light. The condition relapsed as soon as treatment was discontinued.

Upon examination the young man was found to have three carious teeth in his mouth. These were ordered extracted. An evolution of the pustules of the face took place similar to the drying following the use of bacterial vaccines. An autogenous culture was used upon this patient in order to collect a small fee. A permanent cure followed the fee.

This case illustrates a natural immunity established and partially maintained over various lengths of time eventually cured by the surgeon, who in removing the source of infection naturally vaccinated his patient with living organisms. While a bacterial vaccine was used with impunity, I fear it did but little good—certainly no damage was done.

Case III. Superficial boils produce a natural immunity through the aid of a reaction in the true skin. The effects of early and late surgical intervention are too well known to need further discussion.

Case IV. Deep boils. A young lady 18 years of age, suffering from boils under the deep axillary fascia, which were a sequellae of measles, was sent to me for vaccination. The condition was treated surgically and also by autogenous vaccines, without very much improvement—new boils developed daily. I feel that the modern operation devised for the amputation of the breast is safer in the hands of the average man than a blind stab into a deep axillary boil.

Owing to the inclemency of the weather, my patient got wet, took cold, and was confined to her bed with a severe attack of tonsilitis. The temperature ranged from 104 to 105 degrees. At the height of the fever and about the third day of the disease the axillary boils had nearly disappeared. The result was a perfect recovery from the boils and tonsilar infection.

Here again we see the effect of a radical vaccine—natural and with living germs. My only criticism of the autogenous culture is that it was not of sufficient dosage or strength. A bacterial vaccine is safer, because it is a dead vaccine.

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Case V. Super-pubic prostatectomy. Many surgeons persist in opening the bladder super-pubically in order to perform prostatectomy. In fact, they insist that this is an operation of low mortality. With this statement I do not agree, both from observation and by experience. The natural inoculation of the super-pubic wound by living germs from the inflamed bladder is beyond conception. About the third day after operation the loose cellular connective tissue and fat is beginning to undergo necrosis. The color will vary from black at the incision to blue-black and dusky red deep in the pelvis. In spite of the overwhelming inoculation of living germs, a large percentage of these cases recover. Compare this almost overwhelming inoculation by nature with that of a few million germs neatly killed.

Case VI. Sterile catgun. I doubt if there is a piece of catgut prepared by a reputable company today that is not sterile. Notwithstanding this fact how many surgeons who have lost cases have also lost their heads, their friends, and disorganized the nursing force because they failed to realize that any foreign body obstructing the flow of blood may be the most probable seat of localized infection. Nature is continuously passing and repassing these organisms through the blood stream, first, to maintain equilibrium against their continued presence, and again as one avenue of elimination.

I have shown only a few convincing incidents observed during the past year which absolutely overpower any suggestion as to the harmfulness of bacterial vaccinations. However, I do not want anyone to understand that dosage in this matter should be abandoned, as I have personally experienced unpleasant effects from too large dosage. But nature does inoculate much more savagely than the profession and without fatalities.

Those of you who, like Agassiz, study nature and not books can multiply these instances to infinity.

Consequently I feel that bacterial vaccines can be undertaken without fear of unpleasant sequellae because:

First. The reaction is of short duration; consequently there is no danger of injuring a vital organ.

Second. The reaction is not so great as a natural vaccination or inoculation of living germs.

Third. The surgeon inoculates many cases with innumerable living organisms without unfavorable results.

Fourth. The bacterial vaccine is dead.

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THE DISAPPEARANCE OF BERIBERI FROM THE PHILIPPINE (NATIVE) SCOUTS.*

By Major Weston P. Chamberlain, Medical Corps, U. S. A.,
(President of the Board for Study of Tropical Diseases as they Exist in the Philippine Islands.)

Part I. Changes Made in the Filipino Ration for Scouts in the Year 1910.
Part II. Great Reduction in the Beriberi Admission Rate in the Year 1910.
Part III. Relationship Between Decrease of Beriberi and Changes in Dietary.
Part IV. Bearing on Beriberi Admission Rate of Factors Other Than Dietetic.
Part V. Summary and Conclusions.

PART I.

CHANGES MADE IN THE FILIPINO RATION FOR SCOUTS† IN THE YEAR 1910.

INFLUENCED by the work of Braddon, Stanton, Fraser and others on the effects of highly milled rice this Board investigated in 18 Scout companies the incidence of beriberi as related to the diet actually consumed by the men. (1) As a result of the knowledge gained the Board (then consisting of Captains Phalen and Kilbourne) on September 30, 1909, recommended the following changes be made in the Filipino Scout Ration:—

*Read by permission of the Chief Surgeon, Philippines Division, at the Eighth Annual Meeting of the Philippine Islands Medical Association, held in Manila, P. I., February 22d to 24th, 1911.

†The organization known as the "Philippine Scouts" consists of approximately 5,000 Filipino enlisted men serving as infantry. The commissioned officers are Americans. This organization is under the control of and supported by the War Department of the United States and is scattered in small garrisons throughout the archipelago. The Philippine Constabulary, referred to later, is under the control of the Insular Government and has an enlisted strength of about 4,000 Filipinos. It is much more widely scattered in smaller garrisons than is the Scout organization, and it has an entirely different system of rationing its men.

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(1) That the daily amount of rice used per man be limited to 16 ounces instead of the 20 ounces formerly allowed.

(2) That Filipino No. 2 rice (an undermilled article) be substituted for choice Saigon rice (highly milled).*

(3) That 1.6 ounces of beans be added to the ration in place of the 4 ounces of rice not used.

(4) That the issue be authorized of canned tomatoes in lieu of an equal quantity of potatoes but not to exceed 20% of the total issue.

(5) That onions be issued on the same terms as tomatoes instead of allowing them to be substituted for the entire quantity of potatoes.

(6) That no savings be permitted upon the ration of fresh beef and potatoes or their substitutive articles.

The components of the Filipino ration at the time of these recommendations are shown in the following table:

TABLE I.

Filipino Ration, Army Regulations, 1908, par. 1220.

Component articles.	Quantities.	Substitutive articles.	Quantities.
Beef, fresh	12 ounces	Bacon	8 ounces
		Canned meat	8 ounces
		Fish, canned	12 ounces
		Fish, fresh	12 ounces
Flour	8 ounces	Hard bread	8 ounces
Baking powder, when in field and ovens are not available	.32 ounces		
Rice	20 ounces		
Potatoes	8 ounces	Onions	8 ounces
Coffee, roasted and ground	1 ounce		
Sugar	2 ounces		
Vinegar	.08 gill		
Salt	.64 ounce		
Pepper, black	.02 ounce		

It should be explained for the benefit of those not in the military service that such a ration does not indicate exactly what a company eats. "Savings" can be and usually are made on some components of the ration and the money value thereof used to purchase other articles of the ration, or articles not on the ration, for the purpose of adding variety to the company bill of fare. Or the money value of the articles saved may be added to the company fund.

The first and third recommendations and indirectly that portion of the sixth recommendation relating to the saving of fresh beef were made effective by the following instructions of the

*"Polished rice," "highly milled rice," "scoured rice" and "white rice" have been used by various writers as synonyms. They are contrasted with "undermilled rice," "medium milled rice," "unpolished rice" and "red rice," all four terms indicating that more or less pericarp has been left on the grain. Some rices have red pericarp and others have white. If the red pericarp is all milled off, the grain is then white. Therefore the use of the term "white rice" to indicate a highly milled article is objectionable because it leads to confusion between milling processes and color of pericarp.

As far as the presence of adherent pericarp is concerned, undermilled rice corresponds with the "cured rice" of India (not used in the Philippines) and the "Filipino No. 2" rice of the Scout ration prescribed by G. O. 24.

(1) Kilbourne, E. D., Food Salts in Relation to Beriberi. Phil. Jour. Sci.,1910, Sec. B, Vol. V, No. 1, p. 127.

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Division Commander and must have gone into operation at the individual posts between the middle of November, 1909, and the first part of January, 1910.

"Headquarters, Philippines Division,
"Manila, November 3rd, 1909.

"The Commanding General,
"Department of Luzon,
"(Visayas, Mindanao, and Camp Avery).
"Manila.

"Sir:—

"The Division Commander directs that the attention of all Scout battalion and company commanders be called to the directions of the Secretary of War, that with the exception of the meat component of the ration, scouts will be rationed as largely as possible on native food products; to the recommendation of the Board for the Study of Tropical Diseases, that the amount of rice be reduced from 20 oz. to 16 oz. per ration, and that beans to the extent of 1.6 oz. per ration, be used in lieu of rice; to Army Regulations 1262, under which native food products not procurable locally can be obtained from the Subsistence Department as exceptional articles.

"In view of the above, company commanders should not draw rice to exceed 16 oz. per ration. Savings should be made as largely as possible on potatoes, onions and coffee, and native products, such as camotes, mongos, squash, ginger root, etc., be purchased.

"Very respectfully,
J. T. KERR,
"Adjutant General."

Furthermore, steps were taken by the Subsistence Department to obtain a Filipino No. 2 rice (undermilled) to replace the highly milled or "polished" Saigon rice which was used for the Scouts. None of this undermilled rice, however, went into use until about August (as will be shown below). We consider that the provision of undermilled rice combined with the above instructions of the Division Commander would have put into effect the most essential features of the Board's original recommendations.

The situation was complicated by the arrival, toward the end of March, 1910, of General Order No. 24, War Department, February, 1910. This order greatly altered the Scout dietary. The component of the ration thus prescribed are shown below:

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TABLE II.

*Filipino Ration, General Orders No. 24, War Dept., 1910.**

Component articles.	Quantities	Substitutive articles.	Quantities.
Beef, fresh	12 ounces	Bacon	8 ounces
		Canned meat	8 ounces
		Fish, canned	12 ounces
		Fish, fresh	12 ounces
Flour	8 ounces	Hard bread	8 ounces
Baking powder, when in field and ovens are not available	.32 ounce		
Rice, *Filipino No. 2*	16 ounces	*Rice, Saigon (when Filipino No. 2 cannot be obtained)*	16 ounces
Camotes	8 ounces		
Mongos	4 ounces		
Coffee, roasted and ground	.5 ounce		
Ginger root	.5 ounce		
Sugar	2 ounces		
Vinegar	.08 gill		
Salt	.64 ounce		
Pepper, black	.02 ounce		

The camote is a vegetable allied to the sweet potato. The mongo, *Phaseolus radiatus, Linn.*, is allied to the bean. "Filipino No. 2" rice, as the term is used in this ration, means an undermilled rice.

The Board had no knowledge of this new ration prior to the promulgation of the order in the Philippine Islands. It will be seen, however, that the order carried out in spirit the three most important recommendations of the Board in that an undermilled rice (Filipino No. 2) is prescribed in the amount of 16 ounces daily and mongos (equivalent to beans) are added to the ration in lieu of the 4 ounces of rice taken away.

DATES ON WHICH THE COMPONENTS OF THE NEW RATION WENT INTO USE.

The Subsistence Department at once proceeded to obtain mongos and camotes, but in order to use up the large supply of Saigon rice on hand a delay occurred in the issue of the Filipino No. 2 rice. In determining the dates on which the Scouts would actually begin to subsist on these new articles one must consider the date the article was delivered to the Quartermaster's Department in Manila for shipment to posts, the time of sailing of the transports, the time spent on the voyage, the time spent in unloading and the delays, (due to rations being drawn only three times a month) which would occur after the article actually reached the Commissary Officer at the Scout post and which could not average less than 5 days. All of these factors except the last have been embodied in Table III. From a careful study of all the conditions it is possible to set a date before which *none of the articles could have become a part of the diet*, and a period during which they must have been gradually going into use.

Since July 1st, 1910, Scout companies have been authorized to make money savings on the entire ration and purchase therewith such articles as they need, but the purchases must be made from the Subsistence Department, provided it has the desired articles in stock. This new system does not materially affect the feeding of the Scouts. The money value of the ration at the present time is about 14 cents (gold).

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None of the Filipino No. 2 rice *could by any possibility have been in use prior to July 15, 1910, and but little could have been issued at any time in July.* In August the issue became more general and probably all Scout companies were supplied by the last of August or first part of September.

The first consignments of mongos, and of camotes were shipped simultaneously and none left Manila until May 20th, 1910. Under the most favorable conditions of unloading and prompt issue one Scout command (3 companies) *might* have put mongos and camotes into use as early as May 21st, but probably did not. *No other Scouts could possibly have been using these camotes and mongos before May 25th,* even granting that they were issued at once on arrival at the station. About half of the Scouts could not have received any mongos and camotes until well into June. The issue to the last of the posts was not completed till the first part of July.

The first shipments of ginger root occurred at the same time as those of camotes and mongos. In some of the Mindanao posts ginger root was received about ten days sooner than camotes and mongos, but not, however, before the last two or three days of May.

The importance of fixing these dates will be appreciated when the beriberi statistics for 1910 are considered. The details for the shipments are shown in the following table:

TABLE III.

Article of Ration.	First received in Depot Comsy., Manila.	Dates first invoices were turned over to the Quartermaster's Department for shipment to Scout Posts in—		
		Dept. of Luzon.	Dept. Visayas.	Dept. Mindanao.
No. 2 rice.....	July 5, 1910..	July 14 to Aug. 23.	July 14 to Aug. 3.	July 5 to Aug. 5. (a)
Camotes.....	May 20, 1910..	May 20 to May 23. (b)	May 20 to June 2. (c)	June 3 to June 8. (c)
Mongos.....	May 18, 1910..	May 18 to May 25. (d)	On May 18.....	June 3 to July
Ginger root.....	May 19, 1910..	May 20 to June 17.	May 20 to June 2.	May 19 to July 8.
Time consumed in transit to individual posts.		2 to 16 days; average 4 1-2.	4 to 11 days; average 7 1-3.	4 to 18 days; average 10.

(a) This July 5 shipment reached Cotobato on July 13 and Torrey Barracks and Davao on July 15. Issues to the troops were not to be expected immediately after it arrived. (b) One post rationed August 17. (c) One post rationed July 2. (d) One post rationed June 3. Signs (a) is above the date to which it refers and signs (b), (c) and (d) follow the dates to which they refer.

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THE CHARACTER OF THE RICE SELECTED.

The Filipino No. 2 rice selected by the Subsistence Department was examined as regards its pericarp by this Board and approved. It was a mixed rice, having grains with red pericarp mingled with those having a white pericarp. A large amount of the pericarp had been left on the grain. By analysis made in the office of the Surgeon General of the Army it was found to contain, nitrogen 1.32%, potash (K_2O) 0.223% and phosphoric acid (P_2O_5) 0.489%, whereas the polished rice it replaced had contained only 1.08% nitrogen, 0.098% potash, and 0.260% of phosphoric acid.

The mixed red and white rice was approved for two reasons. First, it was possible to determine at a glance, without staining, whether sufficient pericarp remained on the kernel. Second, it was thought that if this *red* rice proved unwelcome to the Scouts a change could be made in subsequent contracts to an undermilled *white* rice which, by contrast with the red rice, would then probably prove acceptable, whereas it would undoubtedly have aroused hostility if substituted immediately for the highly polished article the Subsistence Department has in the past been issuing to the Scouts and which they have come to like because of its snowy appearance when cooked. It is probable that few of the Scouts were used to such a highly polished article prior to their enlistment and in many sections of the Islands a red undermilled rice is commonly used. After several years in the military service where they received only the highest grade of polished rice these natives have become spoiled, in this respect, and it was to be anticipated that the substitution of an undermilled rice, whether red or white, would be distasteful to them for a time.

The truth of the above reasoning has been demonstrated by the experience of the Philippine Civil Government. At the Culion Leper Colony the inmates objected to an undermilled red rice but are apparently satisfied with an equally undermilled rice having white pericarp. The use of undermilled rice has eradicated beriberi from that and other civil institutions in the Philippines and at this point it may be mentioned that on May 4, 1909, Governor-General Forbes issued Executive Order No. 37 *forbidding the use of polished rice in any public institution.*

DISSATISFACTION WITH THE NEW FILIPINO RATION.

For many reasons the new Filipino ration, as ordered by G. O. No. 24, caused dissatisfaction among the troops and in the Subsistence Department. The Filipino No. 2 rice, in addition to being undermilled, contained many unhusked kernels and much broken grain and dirt and furthermore was thought to become infested with worms and insects more readily than did polished rice. The camotes did not keep well and neither they nor the mongos could always be obtained in sufficient quantities in the Island markets. Therefore, some had to be imported. The ginger root was not acceptable to the Scout as a partial substitute for coffee. Neither mongos nor camotes met with favor as constant articles of diet.

RETURN OF THE OLD FILIPINO RATION.

The dietary problem was still further changed on November 7, 1910, when G. O. No. 24, prescribing the new Filipino ration, was

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revoked by a cablegram from Washington. The question of diet therefore reverts to its former status, viz., the old Filipino ration (Table I) with 20 ounces of polished rice as a component. There is, however, so much Filipino No. 2 rice on hand in the Subsistence Depots that its issue and use will continue for several months. Meantime the Board is making efforts to have the ration modified to the extent of forbidding the use of more than 16 ounces of rice daily per man and prescribing a first grade undermilled rice with white pericarp in place of the highly milled grain which the ration now calls for.

LESSON LEARNED FROM USE OF FILIPINO NO. 2 RICE.

A very desirable lesson has been learned from the issue of the Filipino No. 2 rice. The Board now recognizes that the term Filipino No. 2 rice was an unfortunate one for two reasons. First, some samples of commercial Filipino No. 2 rice are highly milled or polished. Second, Filipino No. 2 rice is second grade not only in respect to its milling (i. e., pericarp removal) but also as to its husking and screening and probably at times is produced from an inferior quality of "palay" ("padi"). The original selection by the Board of Filipino No. 2 rice as the beriberi-preventing type was due to the fact that when our recommendation was made no other kind of undermilled rice could be found in the Mainla market and there was much less knowledge of and interest in the subject, on the part of the rice dealers, than is now the case.

What the Board now recommends for the Scouts is a rice of the highest grade and in all respects like the "choice rice" of the Subsistence Department except that it is "undermilled" (i. e., has much of its pericarp left on). In this connection the use of the word "milling" refers only to the process of decortication carried on (in most mills) between a stone cone and the metal-gauze case within which the stone revolves, and does not have reference to the other processes carried out in the same building, such as husking, winnowing, screening and polishing between sheep skin buffers. We also recommend that, for appearance sake only, this rice be prepared from "palay" having white pericarp.

Such a rice can now be produced in these Islands and the millers state that its keeping qualities should be equal to those of highly milled rice. The Board has recently examined samples of a rice from Siam styled "Asylum No. IV." This is an undermilled rice prepared under the supervision of Dr. Highet of Bangkok, who states that it has been used for

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six months in an asylum and found to prevent the development of beriberi. Except for an occasional red grain the rice is white and has much the large part of the pericarp remaining on the kernels. There are very few unhusked or badly broken grains. The dealers state that they can furnish in quantity rice conforming to this standard. This rice is found by the Bureau of Science to contain 0.52 per cent of phosphorus pentoxide and this we consider an index of its safety. It appears that rices containing over 0.40 per cent of phosphorus pentoxide will prevent beriberi, and this can be used as an indicator, irrespective of whether or not one accepts the phosphorus theory of beriberi production.

PART II.

GREAT REDUCTION IN THE BERIBERI ADMISSION RATE IN THE YEAR 1910.

The numerous changes which have occurred in the Scout ration during the year 1910 render necessary a somewhat elaborate analysis of the situation before one can decide to which factors should be ascribed any peculiarity which may be found in the beriberi rate for the period. From the standpoint of scientific dietetic study it is unfortunate that so many alterations were made in such close sequence.

Let us now determine if any peculiarity is manifest in the beriberi admission rate for the year 1910. A glance at the following statistical tables will settle the question by showing an unprecedented decrease in the amount of that disease among the Scouts for the calendar year 1910:

TABLE IV.

*Beriberi Statistics for Philippine Scouts. Calendar Years 1902-1910.**

Calendar Year.	Mean Strength S. G. O.	Admissions.		Deaths.		Discharges for Disability.	
		Number	Rate per 1000	Number	Rate per 1000	Number	Rate per 1000
1902	4,826	598	123.92	29	6.01	2	0.41
1903	4,789	614	128.21	22	4.59	5	1.04
1904	4,610	334	74.62	7	1.52	6	1.30
1905	4,732	170	35.93	6	1.21	1	0.02
1906	4,759	176	36.98	9	1.79	6	1.19
1907	4,679	115	24.58	6	1.28	3	0.64
1908	5,085	618	121.54	7	1.35	13	2.50
1909	5,369	558	103.93	12	2.17	33	5.96
1910	5,422	49	9.02	2	0.36	3	0.55

From a study of Table IV it is plain that beriberi was very prevalent during 1902 and 1903 and that there was a *slow* and *gradual* yearly decrease in its incidence down to 1907, when the total number of admissions had fallen to 115. In 1908 there was a sudden increase to 618 admissions,* the largest number record-

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TABLE V.

*Admissions for Beriberi by Months. Calendar Years 1908-1910.**

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1908...	14	34	102	23	51	33	55	39	63	59	88	63	624
1909...	138	89	96	88	38	24	28	36	7	27	22	11	604
1910...	19	8	12	3	4	1	0	2	0	0	0	0	49

ed in any one year. In 1909 the number of admissions was but little less, 558, while for the year 1910 there were only 49 admissions, a most significant drop when it is considered that all the sanitary conditions were unchanged except the diet. The drop in the death rate and in the discharge rate are equally remarkable.

PART III.

RELATIONSHIP BETWEEN DECREASE OF BERIBERI AND CHANGES IN DIETARY.

It will be seen in Table V that 39 (or 80 per cent) of the admissions occurring in 1910 appeared in the first three months of the year, a time when the ration changes recommended by the Board had been in effect but a short time or were just being put into effect. It is important to note that some decrease in admissions began in the last quarter of 1909 and that just prior to that time members of the Board has visited many Scout posts, especially those where the disease was rife, and had investigated the dietary actually in use and advised company commanders to limit the daily consumption of rice and to use liberally the other components of the ration instead of economizing for the purpose of making cash savings. We believe that the effect of the Board's recommendations at the Scout posts visited, followed by the ration changes inaugurated by the Division Commander and by G. O. 24, has been to diminish the quantity of rice consumed by Scout companies and to increase the amount of meat, beans (mongos) and other components used. The harmful influences attributed to polished rice are believed by us to be due not to

*Table IV, except for the year 1910, is taken from the reports of the Surgeon General of the Army. Table V is compiled from records in the office of the Chief Surgeon, Philippines Division. The discrepancy between the total admissions in the two tables is due to the fact that in the Chief Surgeon's record a new admission is recorded if a patient is transferred from one hospital to another, whereas in the Surgeon General's report one admission is recorded for such a case. The admissions (49) for 1910 should really be compared with the Chief Surgeon's figures for 1908 and 1909. (624 and 604, respectively.) This would make the showing even more favorable than is given in the text. Fractionally it means that the admissions for 1910 were less than one-twelfth of the average for the two preceding years.

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the presence of any injurious element in such rice but simply to the absence from it of some substance necessary for proper nutrition. Hence it becomes evident that a diminution of the quantity of rice consumed and a substitution therefor of suitable articles of food might produce the same results as would be obtained from the use of an undiminished quantity of rice in which the necessary nutritive substance was present in proper amounts. Therefore favorable results following the carrying out of our recommendations would by no means be in opposition to the polished rice theory of beriberi even when the good results appeared before the undermilled rice went into use.

Undermilled rice not the cause of decrease in Beriberi Admissions.—It is obvious on examining Tables III, V and VI *that undermilled rice could have had nothing to do with the great decrease in beriberi admissions which occurred prior to August 1, 1910,* and it probably could have had nothing to do with the low rate in August. Undermilled rice *may have contributed a share* to the continuance of the good results in September, October and November.

Influence of Mongos, Camotes and Ginger Root on Decrease of Beriberi.—A study of Tables III, V and VI (together with the remarks above Table III) will show that the marked decrease in the beriberi rate for April and May and probably for June could not have been due to the mongos, camotes and ginger root added to the ration by General Orders No. 24. At this writing there are no figures to show how extensively mongos and camotes were used as a result of the Division Commander's letter of November 3rd, 1909. So a beneficial influence from mongos and camotes prior to May, 1910, cannot be excluded. For reasons which will not be entered into here the Board does not consider that there is any special virtue in mongos and camotes as compared with beans and Irish potatoes which would enable them to prevent beriberi. There is little doubt that the mongo is a good beriberi preventing vegetable, but it is not any better than the bean recommended by this Board on September 30th, 1910. We do not consider either camotes or potatoes of much value in preventing the disease. The influence of ginger root can be eliminated because of its date of issue as well as for other reasons.

The real Cause of the Eradication of Beriberi from the Scouts.—From the above discussion the Board concludes that the

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important beriberi preventing factor in the new Filipino ration prescribed by G. O. No. 24 was neither mongo, nor camote, nor ginger root, nor undermilled rice, *per se,* but was *the reduction in the quantity of rice consumed and the substitution, in lieu of the rice taken away, of a legumen,* which in this case was mongos but which might equally well have been beans as recommended by the Board on September 20th, 1910.

Graphically, the following table will show the periods over which there was active each one of the five new factors, (a) undermilled rice, (b) camotes, (c) mongos, (d) ginger root and (e) reduction of rice to 16 ounces and addition of a legumen. The solid part of the lines indicates the period during which the influence was general and the dotted part the period during which the influence was beginning and did not affect all the Scout organizations.

TABLE VI.

Beriberi Admissions by Months, Calendar Year 1910, and Influences Acting Thereon.

1910	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Admissions...	19	8	12	3	4	1	0	2	0	0	0	0
No. 2 rice (a).												
Camotes (b)..												
Mongos (c)....												
Ginger root (d)												
Reduction and legume (e)												

It is obvious that factor (e), viz., reduction in the amount of rice and addition of a legumen, is the *only one* which has been operative during the whole period of marked reduction, April to December.

It might be argued, by those favoring the nitrogen starvation theory, that the decrease in beriberi in 1910 was due to an increase in the amount of meat consumed by the Scouts as a result of the letter of the Division Commander which directed making savings as largely as possible on potatoes, onions and coffee. We do not think that an increased meat consumption has been an important factor for the following reasons:—(a) The Scout did not, as a rule, make large savings on his meat component and (b) the meat allowance is so great (12 ounces) that the Scouts could make considerable savings thereon and still have an amount larger than is furnished the soldiers of many of the European armies, the French allowing 10.6 ounces of meat, the Russian 7.75 ounces, and the Austrian 6.7 ounces. In considering these figures it should be borne in mind that the average weight of a Filipino is about 4-5 that of a European or American.

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PART IV.

BEARING ON BERIBERI RATE OF FACTORS OTHER THAN DIETETIC.

During the year 1910 we are aware of no changes in the sanitary conditions among the Scouts, other than dietetic, which could account for the lowered incidence of beriberi. There has been no marked decrease during 1910 in the admission rate for other diseases. The average monthly admissions for all diseases was 420.5 in 1908, 393.9 in 1909, and 341.5 in 1910. Since beriberi was causing an average monthly admission of over 50 in 1908 and 1909, while the average was only 4 in 1910, it is evident that the average monthly admissions for all causes other than beriberi was not materially lower in 1910 than it was in 1909.

That the reduction in beriberi among the Scouts in 1910 is not coincident with a corresponding lessening of beriberi cases in the general population of the Philippines may be inferred from the following table of death rates which were furnished us through the courtesy of the officials of the Bureau of Health.

TABLE VII.

Fiscal Years.	Deaths from Beriberi.		
	In Manila.	In 22 provinces, population about 5,000,000.	Total.
1906	406	2,228	2,634
1907	403	1,377	1,777
1908	492	1,180	1,672
1909	924	1,765	2,689
1910	1,002	1,395	2,397
1911 (1st half)	911	Not obtainable.	.....

It should be noted that the rates in Table VII are for *fiscal* years while those in Tables IV and V are for calendar years. Also that the rates for Manila, 1911, are only for *half* a fiscal year and correspond to the calendar period of June to December, 1910, a period when the admission rate for the Scouts was practically *nil*. We do not attach much absolute importance to the figures in Table VII because the death rates for the general population of the Philippines, even in Manila, are notoriously unreliable for beriberi as well as for other diseases. We do feel, however, that the rates are, relatively, as reliable for 1910 as for the few years preceding and that therefore any extraordinary reduction in the incidence of beriberi in 1910 would have been mirrored in these figures which show a decided increase rather than a decrease in the death rate for the calendar year 1910 in Manila and no very notable decrease in the provinces.

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The number of cases of beriberi among the Philippine (native) Constabulary, furnished through the courtesy of Major S. C. Guerney, are as follows:

1908—52 cases. 1909—193 cases. 1910 (11 months) 61 cases.

The occurrence of cases by months for 1910 is shown in Table VIII and compared with admissions for same months among the Scouts.

TABLE VIII.

Comparison of Admissions for Beriberi Among Scouts and Constabulary.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Scouts.....	19	8	12	3	4	1	0	2	0	0	0	0
Constabulary..	7	14	1	1	7	7	9	4	3	2	6	(?)

The Constabulary consists of approximately 4,000 enlisted men, widely scattered throughout the Archipelago. For some years their beriberi rate has been much less than that for the Scouts, this difference probably being due to the fact that they are differently rationed. The admission rate for 1910 is only one-third that for 1909, but is higher than for 1908. On looking at Table VIII it is obvious that there was no such falling off in the beriberi admission rate among the Constabulary for the last half of 1910 as was seen among the Scouts.

It must be admitted that the very high Scout death rate (2.17 per 1,000) and discharge rate (5.96 per 1,000) for beriberi in the year 1909 may have been to some extent responsible for a low admission rate in 1910 because these two processes, death and discharge for disability, doubtless eliminated many old chronic cases which had kept returning on sick report after having been apparently cured. We do not think, however, that this was the important feature in lowering the admission rate for 1910.

PART V.

SUMMARY AND CONCLUSIONS.

The Board Still Adheres to the Polished Rice Theory of Beriberi Production.—The real factors in the eradication of beriberi from the Scout organizations have been a reduction in the amount of rice consumed and the addition of legumen. The result was accomplished without the use of undermilled rice. The Board still favors the polished rice theory of beriberi production as being the one best supported at the present time by experimental evidence and practical experience in many localities. It is considered that the good results with the Scouts' help to support the theory. The Board feels that the adoption of an undermilled grain for the Philippine Scouts will allow rice to be used *more freely by these soldiers with less risk of beriberi than*

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would be the case if the polished article were supplied to them. This is a very important point because, as a result of racial taste and custom, a certain number of natives will attempt to subsist mainly on rice no matter how extensive, varied or well balanced may be the diet supplied to them by the Subsistence Department. If polished rice is being issued to the troops these men will be the first to develop beriberi whenever for any reason a period of unfavorable dietetic administration supervenes.

Since rice is the natural and economical diet for the Oriental native it follows that the free use of undermilled rice is likely to work in the direction of both efficiency and economy.

CONCLUSIONS.

(1) Beriberi has disappeared from the Philippine (Native) Scout organizations during the last half of the year 1910.

(2) There have been no sanitary improvements to account for this except the changes in diet and there has been no corresponding decrease in the admission rate for diseases other than beriberi.

(3) There was no corresponding decrease in the incidence of beriberi in the general Filipino population or in the Philippine (Native) Constabulary.

(4) The decrease in admissions for beriberi among the Scouts was clearly marked for four months before the use of undermilled rice began.

(5) The decrease in admissions was well under way before the mongos, camotes and ginger root of the new ration began to be issued.

(6) The decrease in the admissions for beriberi was due either to unknown causes acting coincidently with a reduction in the amount of rice used and the addition of a legumen, or was due directly to these dietetic changes. As no other reduction in admissions even approaching that of 1910 has occurred since the organization of the Scouts in 1901 we do not believe that the present decrease is due to coincidence.

(7) The facts do not oppose the polished rice theory of beriberi production. On the contrary we believe that they support it.

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SERVICE AT MINNESOTA FOREST FIRES OF 1910.

By Captain Harold L. Lamb, Medical Corps, Minnesota National Guard.

MUCH has been published descriptive of the forest fires which devastated northern Minnesota last fall, and that terrible cyclone of flame, which on the evening of October eighth swept the southern border of the Rainy river, in a few minutes time completely erasing the thriving twin towns of Baudette and Spooner. It is not the purpose of this article to give a narrative of this disaster, but even if it were, the writer's pen would fail the magic necessary to paint its horrors. About fifty lives were lost and several thousand rendered homeless and destitute.

Immediately after the news reached St. Paul Adjutant General Wood ordered a relief train loaded with military, commissary and medical supplies and hurried northward to the sufferers. Accompanying him on this train were Gov. A. O. Eberhard, Attorney General Simpson, Red Cross officials, two visiting nurses, Major Hart, commissary, and Major Clark, surgeon assigned to the First Infantry. The last instituted the work of sanitation in the entire burned area.

Co. K, 3rd Inf., of Bemidji, reached Baudette the day following the fire and began the work of temporary relief and afforded protection to the bank vaults and safes. General Wood upon

RELIEF STATION AND CAMP, BAUDETTE, OCTOBER 22, 1910.

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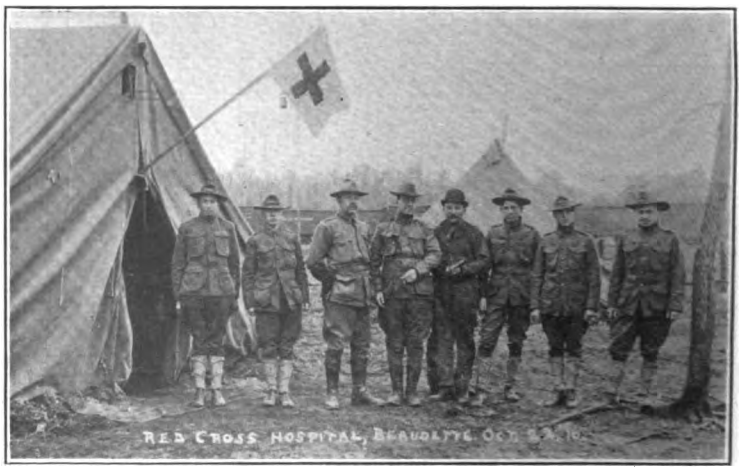
COMMISSARY DEPOT ERECTED IN TWO DAYS BY UNSKILLED LABOR.

his arrival assumed command and ordered out Cos. A, C, and E, 3rd Inf. of Duluth. At the same time I received telegraphic orders to report to him with five men of the hospital corps located here at Sauk Centre. After a tedious journey, partly through Canada, we reached Baudette and the battalion went into camp in the vacant square where the school house had recently stood. Ample tentage sheltered the refugees who were camped with us, and two large kitchen tents, presided over by lumber-jack cooks, fed hundreds daily.

I was directed to assume sanitary control of the camp and in addition to the usual military duties, to take up the work of



MEN OF THE HOSPITAL CORPS.

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From left to right—Hospital Corps orderly, Miss Dolan and Miss Karlsteen (visiting nurses), Lieutenant Harold Lamb and Major T. C. Clark.

medical and surgical relief to the fire sufferers. The sanitary situation was serious, considering that previous to the fire there was an existing typhoid epidemic of about twenty-five cases. These, until the arrival of aid, had been thoroughly mixed with the other refugees, the water and food supply and toilet accommodations at the same time being in a state of chaos.

Three principal problems in camp sanitation required solution: viz, water supply, sewage disposal and the disposal of kitchen garbage and wash water. The first had been solved by Major Clark and Dr. Hill, of the State Board of Health, all wells being

This picture gives a more comprehensive view of site formerly occupied by Baudette. Former population, 1,700.

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destroyed except two, which were pronounced reliable. By one of the freaks of this peculiar fire the two large out-houses of the school house escaped and this settled the question of latrines for troops and civilians. However, shortly after our arrival the warm days brought back the flies, and considering that there were many beginning cases of typhoid among the fire sufferers, our kitchen tents were in great danger. This was met by promptly obtaining from Duluth fifteen hundred feet of mosquito bar, with which the men of the hospital corps screened the doors and windows of the latrines, covered the openings to the kitchen tents and also all mess tables and exposed food. Lime, of which we had an abundance, was sprinkled into the toilets several times daily. The character of the soil in this region is a heavy gumbo which lacks all power of absorbing fluids. The ordinary kitchen pits promptly became filled and useless. To meet this emergency the writer devised and constructed a sanitary sink, which he would heartily recommend to the attention of camp sanitarians. It successfully purified and disposed of all kitchen refuse and wash water. Lack of space prevents a detailed description of this sink, but the writer will be pleased to give this information to any who may care to apply to him. The men were sheltered in Sibley tents, each furnished with the conical stove and six mattress spring cots, tar paper being used to cover the ground.

The troops were massed at various times and given instruction concerning personal hygiene and self protection from the existing dangers.

The first work of this military expedition was temporary relief, shelter and first aid to the homeless. After this everything gave way to the sanitation, both destructive and constructive, of the devastated district. Much of the actual detail of this work was supervised by the line officers and hospital corps men. The troops did the work, which from its nature, called for great physical endurance and hardships. They were aided by civilian residents, most willingly, if not, under the escort of an armed guard, for whom this element had great respect.

The forests and swamps were covered by patrol parties, who buried all dead bodies and also the carcasses of animals, which they discovered in abundance. Both out on the homesteads and in the towns all wells and cisterns were filled, all vaults and cesspools destroyed and new ones erected only under supervision. A herd of cows, which had escaped, was collected and milk was

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bottled and distributed by one of the hospital corps men to mothers having infants.

Our dispensing tent was supplied with one detached service chest and an immense quantity of surgical dressings suitable for the occasion and consisted chiefly of gauze (sterilized and in bolt), cotton, adhesive plaster, alcohol, stimulants, antiseptics, zinc oxide ointment and an extra supply of the most commonly used medical tablets of the service chest. All fire sufferers were given medical and surgical care, both at the dispensary and in their tents. Aside from typhoid and burns, the conditions encountered were largely the result of exposure, exhaustion and unaccustomed conditions of living. As the writer can testify this part of the work was very exhausting. It devolved on him to minister to burned and wounded cattle, and even to institute bathing accommodations for the children of mothers who were somewhat lax as to these details of toilet.

A rigid scrutiny was maintained for typhoid suspects, and all cases discovered were segregated and sent to a permanent hospital established for this purpose by the Red Cross and civil authorities in a store building in old Baudette, which escaped the fire.

In looking back over the work and the result of this expedition there is much to contemplate with satisfaction. Those in military command, recognizing the danger of existing conditions and the spread of disease and loss of life which must result, made everything subservient to the work of the medical corps until sanitary safety was accomplished. Under no other system than that of military discipline and authority could this have been prosecuted in this successful manner and in the brief time which was consumed. At the typhoid hospital nearly one hundred cases were cared for during its existence, with no deaths. Inquiry concerning the health of the troops made one month after their return home brought the information that not a case of typhoid, dysentery or allied conditions had developed.

The officers and men did a noble work under conditions most trying and fatiguing and they again demonstrated the worth of of our citizen soldiery, of which this regiment is only a fair example; a great body of men displaying at all times and under all conditions intelligence, efficiency and patriotism.

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A STATEMENT OF A RECENT INSTANCE OF PROTECTION FROM TYPHOID BY INOCULATION.

By Major William J. L. Lyster, Medical Corps, U. S. A.

THE present prominence of inoculation as a means of preventing typhoid warrants the presentation of all data on this subject. The interest is not confined to military circles as is shown by the questions asked by civilians, and even the references in popular magazines to inoculation as an accepted procedure.

Evidence as to the efficacy of inoculation must be largely presumptive in character and hence the reason for presenting the following account:

June 17th, 1911, Headquarters, Band and 11 troops of the 11th U. S. Cavalry proceeded by train to Nashville, Tenn., to participate in the military tournament held there during the subsequent ten days. This regiment with other regular troops was encamped at the outskirts of that city, and furnished with water from the city mains, though some messes and the hospitals used distilled water.

At this time 165 of the regiment had been inoculated. Typhoid was known to exist at Nashville. The latrines were of the "dry earth closet" type, the board sheds inadequately excluding flies, which were fairly numerous. Lime was used instead of dry earth and the closet contents removed once or twice daily. Undoubtedly of the thousands of civilians daily and nightly thronging the grounds some used these closets and may have been "carriers."

On the return of the 11th Cavalry to station typhoid appeared among soldiers who had been at Nashville and within the period of incubation. The same thing occurred in two other regular organizations that came from the tournament to Fort Oglethorpe for the summer maneuvers. Altogether some 8-10 cases gradually appeared. No local focus could be discovered. The last cases to develop were probably "contact cases." Comprehensive and thorough sanitary measures were taken, ordered by the Post Commander to limit the extension. The inoculation of the rest

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of the regiment was hastened by the issuing of the following order:

"Post General Orders No. 100,
"Fort Oglethorpe, Ga., Sept. 7, 1910.

"There being danger of an epidemic of typhoid fever at this post, and it having been demonstrated that typhoid fever inoculation prevents the disease, all officers and soldiers under fifty years old, except those who have previously had typhoid fever or are already inoculated, are hereby directed to present themselvs for the typhoid fever inoculation. Exceptions will be made in certain special cases, upon written application, but such men will not be permitted to go outside the post where they run any danger of infection."

After the completion of the inoculation of the regiment (736) and nearly 70 civilians at the post, including the teamsters, no new cases appeared.

September 27th, 1911, this regiment, except one troop, left post on a 21 day march, going to Knoxville, Tenn., and return, some 300 miles, and through country the population and general conditions of which resembled that at Nashville. It is a fair assumption that using the water as found at the numerous camps made during this march that exposure to the infection of typhoid would be greater than during the camp at Nashville. Typhoid existed in Knoxville and at Soddy, where the regiment encamped.

There were no attempts to boil or sterilize the drinking water used on this march, the supply being from whatever was used locally. On the return of the command after spending 21 days in a country where typhoid is known practically throughout the year and having lived under war conditions, the sick report is stated by the commanding officer to be nil. No subsequent cases of typhoid developed. While from the nature of the experiment the result is only presumptive evidence in favor of inoculation it cannot well be made conclusive for obvious reasons.

The points are—1st. The cessation of spread by contact after completing the inoculation of the command. 2nd. The non-development of the disease in a *protected command* in the field under war conditions after probable exposure. 3rd. None of the cases that appeared after the trip to Nashville were among the inoculated.

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HOSPITAL CORPS INSTRUCTION ON BOARD SHIP.*

By Passed Assistant Surgeon W. S. Pugh, Jr., U. S. Navy.

FOR a number of years past I have been much interested in the instruction of members of the hospital corps in their various duties aboard ship.

While working along these lines I have been struck at learning of the small amount of instruction which these men are given aboard ship by medical officers, in fact I can go still further and say that many of these men get no instruction whatever.

When discussing this question with a number of officers, and insisting on the great importance of the subject and absolute necessity that they do something in this line, only too frequently have I been told, instruct them, no; why should I do that when we have a school for that purpose in Washington where they are taught all that is necessary for them to know, we are not expected to make them experts. To the first question I can say, yes, we have an apprentices' school in Washington which thanks to the earnest efforts of Surgeon Elliott is an excellent school in which good things are being accomplished and it is improving all the time, but think of the small proportion of members of the hospital corps who are fortunate enough to be able to take that course. In the service I have met but very few of them, in fact all the hospital corps men that have served with me received all or most of their instruction from me. I think this effectually gets rid of one argument; in the second place, say a man does enter the school and graduates there, his education should not cease with that. Why? In the first place we cannot compare the mental capabilities of enlisted men with officers, because the former have not had an opportunity to develop their minds so broadly or having had an opportunity have neglected it, and in accordance with the above, if these men are not constantly reviewed on the subjects they have been over in the school they are going to lose them, in other words they must be taught by example and impressions to develop a retentive memory. This

*Read by title at the 19th Annual Meeting.

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does not only apply to the dullest, but I have found it to apply to all in varying degrees from the best to the worst.

The course at the school is brief, about five to six months and all of you who have had any hospital experience in civil life will realize at once the impossibility of making a trained nurse in six months. The school does not make any pretense of doing this, but what it aims at is merely establishing a foundation for the men, so that when they go aboard ship or into a hospital they will not wash surgical instruments in bichloride, or store them in the galley stove, etc.

I have been told that we do not need trained nurses in the Navy on ship. This statement, of course, is absurd as we of the Navy ashore and afloat have as much right to the best nursing as we can obtain, and as we have plenty of material why not develop it? Of course it is manifestly impossible to have female nurses on ships of war, so that our nursing must come from the members of the Hospital Corps proper.

We have again been told that men of the enlisted personnel do not make good assistants or nurses, 1st, because as men they do not feel so interested in this line as a woman does. 2nd, That they cannot assist at operations because they may make little slips and overlook things, which seem of little importance to them, but in reality are of great moment to the surgeon. 3rd, Carelessness, uncleanliness, roughness, etc.

All of the foregoing objections are easily overcome as follows:

Men must be taught the importance of their work, and their responsibility pointed out to them, and why it is necessary that detail should not be neglected. I have found but few men, who after the above kind of talk do not take an interest. In regard to positions as assistants, they make excellent assistants after they have been properly instructed. Of course we cannot expect a man to go right in as an operative assistant and do sponging, hemostasis and dressings, certainly not, you did not become assistants in any such manner, nor did I, and I believe in giving these men instruction in this assistant work the way we obtained ours.

When these men have been instructed properly they make the best assistants. Yes, I say best assistants, because some of the men who have been with me on the various ships I have been attached to have been as good as you will find anywhere, in fact several were far superior to most physicians I have seen or had assist me.

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The same holds good in regard to anesthetics, there are, however, many people who think that only an M. D. is qualified to give an anesthetic, well, maybe he is and maybe he isn't, the chances are it's the latter. I have seen as fine anesthetic work in the Hospital Corps, U. S. Navy, as is obtainable anywhere. A move has been made in the United States and Great Britain to allow only certain qualified M. D's. to give anesthetics; the surgical trust in the U. S. is attempting similar things. Some of the best surgical institutes have their anesthetics given by nurses, etc., who are not M. D's. and excellent results are obtained, notable among these is St. Mary's Hospital at Rochester, Minn., where all this is done by the nurses, including all that for Drs. Mayo and Judd. I have found that roughness and untidiness can always be overcome by the action of a firm hand.

Enlisted men in the Navy are so nearly like children, that one is often surprised to learn their real ages. These little points can usually be overcome with gentleness and firmness, that not succeeding I resort to firmer measures, and finally a man who is not amenable to sick room discipline must in some way be gotten rid of. We have often heard it said, instruction of this kind is difficult and it takes a long time to make good, or that I am a surgeon on a big ship and I have not the time to spare. In regard to this I can say that there is nothing easier than Hospital Corps instruction and surely no one in the Navy can fairly say he is too busy to do it. Now what are we going to do; how shall the instruction be carried out?

Now that we are fully aware of the fact that it is up to us to begin or continue this instruction on board ship, what kind of a routine shall we adopt?

I have found it at times a difficult matter to have these men retain what has been said to them in a lecture, but that they do particularly well under practical instruction, with demonstrations to supplement the course.

When a Hospital Corps man comes aboard ship, he should, if possible, be placed under the guidance of another who has seen some service and realizes service conditions. He should be taught by this man the ship routine and how to keep himself clean both in body and dress. He should be taught the various details about the ward and should fill all of them, beginning at the simplest and working up to practical charge of the ward. The recruit, until he has thoroughly familiarized himself with the gen-

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eral detail work, should not be allowed to handle patients in any way. To be perfectly plain, he should only follow the movements of his senior fellow corpsman and simply do what he is told. The senior members of the corps should be brought to take an interest in the new man, and instill into his mind the dictum of hands off until they are thoroughly acquainted with what they are doing.

This preliminary work the medical officer cannot do, I admit, as it requires a constant watchfulness.

Now as to the course of instruction proper, we should begin by giving the men a general knowledge of the human body. The various elementary subjects can be covered rapidly by giving about two hours a day or even a little less. The subjects gone over one day will be read up by the new man and he will be quizzed on them the next.

WHAT SHOULD HE STUDY?

1st. Elementary Anatomy, its chief divisions being,

1. Bones, their names, where located, and their functions; also the principal parts and their significance.
2. Joints, same.
3. Muscles, principal groups of, voluntary and involuntary, their functions, different types of motion produced.
4. The circulation and its various parts and functions.
5. The nervous system. The brain, cord, meninges and principal parts.
6. Respiratory system.
7. Urinary apparatus.

2nd. Physiology. (Much of this can be covered under the head of anatomy and to good advantage.)

1. Foods.
2. Digestion.
3. Circulation.
4. Respiration.
5. Absorption.
6. Special Senses.
7. Secretion and excretion.

If the man is not a laggard he can master the greater part of these two branches in a month or a little over.

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Following the anatomy and physiology work, first aid is next in line and this is certainly and easily taught by practical demonstrations. Now that the man knows where the large vessels and important parts are the arrest of hemorrhage and the first aid treatment of fractures and dislocations are easy and it is really surprising how quick they are picked up when taken in this manner.

The first aid should include wounds of various kinds, poisons, insect and snake bites, sunstroke, heat exhaustion, common poisons, effects of cold, fractures, dislocations, transportation of wounded, etc. In teaching first aid the young man should not be taught the use of nice, refined splints, which are only of use to a medical man, but should be taught to improvise and use any old thing in sight, viz, all kinds of junk; in fact, I am very fond of calling this my junk course. Old boxes, cans, pieces of pipe, old broken rifles, pieces of tin, lumps of wood, baseballs, should be used.

The fact must not be lost sight of that he should be taught other minor medical and surgical procedures as we go along, viz, when a hypodermic is given he should stand to one side and the various parts of the hypodermic should be explained; also the preparation for it by the nurse.

The making of beds and why various things are done. Following the above, practical nursing should be taken up, starting with the cleansing and examining of the patient, the temperature, pulse, and respiration, and what they mean and how taken.

The various methods of bathing, hot and cold baths, applications, enemas, etc. Ward management should be gone over, viz, the preparation of the linen, its distribution, sorting for the laundry, marking, sterilization, etc.

Disinfection of various compartments by the various methods. This should be largely by practical demonstrations, supplemented by reading.

Nursing in infectious and contagious disease. Precautions for patient and nurse. Under the supervision of another apprentice these men can be put on duty as registrars and ward clerks. They take the temperatures, pulse and respiration, examine patients generally, and note the conditions found on their charts, and they should be taught to cultivate powers of observation.

Under the head of medical nursing the following should be taken up: General care of patients, as care of the mouth, skin, bed sores

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and how prevented, care of the hair and conditions liable to occur in same such as pediculi and their management. Cleansing of the various parts of the body and things provided for doing the same. Observations of patients. The various points to be observed. Eyes for fixation or great mobility, congestion, puffiness, etc. Throat and teeth, significance of fur on teeth, membranes in throat.

Breath and breathing, odors and manner of breathing, as stertor, etc. Alcohol on breath. Breaths of stomach or tubercular disease. Cough and sputum, the care of the latter, note character and amount. Sputum receptacles.

Chills, cyanosis, jaundice and their significance.

Perspiration, various types of, and significance.

Pain, when and where felt, watch on same. Convulsions, rashes and their significance.

Gaseous distensions, tympanites, etc.

Stools and urine, how recorded, receptacles for same and their care. What to look for in urine, stools, etc.

Under the head of temperature:

We should explain the different kinds of thermometers, the methods of conversion, temperature and pulse ratio. The various methods of taking temperature, as mouth, rectum and axilla. Two thermometers, one for rectum, one for mouth, and same being marked. The general care of thermometers, taking temperatures in delerious cases. Difference in mouth, rectal and axillary temperature.

What is fever, its causes, the various types of temperature as moderate high fever, hyperpyrexia, etc. Various phases of fever, as the prodromes, invasion, fastigium, defervesence, lysis, crisis, continuous fever, remittent and intermittent fevers.

The Pulse.

How, when and where it may be taken. Various types of pulse and their significance, rate and force of pulse, forms of abnormal pulses, how detected, and their significance, such as dicrotism, high tension, etc.

Respiration.

What it is, the difference between normal and common types of abnormal breathing.

How the respirations are to be taken; patient being unconscious of same.

Under the head of comfort to patient we should consider the

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management of our patient's bed, the position in which he is to be kept and that in which he will be most comfortable. Just at this point we must impress upon the nurses to keep us informed of a patient's bed posture as this apparently trivial thing often gives us very valuable clues to our patient's condition.

Bedsores, their prevention, and treatment when formed.

The various kinds of beds to be prepared, viz, the admission bed, post operative bed. The fracture bed and its preparation. Draw sheets, their use, etc.

Changing of bed linen with as little disturbance to the patient as possible.

The bedding in contagious and infectious diseases and its treatment.

Moving of patients from bed to bed.

Air beds, water beds and their management and uses.

The treatment of paralyzed bed cases.

Baths and external applications.

Baths in general and why they are used.

Various types of fever baths, as cold sponge, wet pack, cold baths. The technique of these cold applications should be described and what is perhaps of most importance the precautions to be observed.

Various other hydrotherapeutic measures can be taken up as the various forms of cold douches and how they may be improvised when the full paraphernalia are not at hand.

Warm baths and hot packs, the technical uses and dangers incident to same.

Hot and cold applications, such as ice caps, hot bran bags, electric pad, etc. The general method of application and the need of a careful watch on these treatments.

Douches, their uses and abuses.

Irrigations of eye, ear, urethra, rectum, etc., precautions for same, accidents that may occur.

Enemata and their uses, high and low. Proctoclysis, its use and the need of great patience and care in its use.

Sedative enemas, stimulating enemas, nutrient enemas, etc.

The rectal tube and its use.

The preparation of the common enemas.

Catheterization. Instruments used, how to prepare for same. The great importance of having everything sterile. In fact it should be impressed upon the nurses that this little procedure is

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just as important as an operation. Catheterization to be used as a last resort, the necessity of using other methods first, as hot supra-pubic applications, erect posture, sitz baths, running water, etc.

Preparation of patients for various therapeutic procedures, such as aspiration of the chest, tapping of the abdomen, scrotum, etc. The gavage and lavage procedures and their preparations and uses.

Antitoxins, vaccines, their uses and how prepare for their administration.

Hypodermocylsis, and intravenous infusion, intubation, etc.

Fomentations, stupes and the application of counter irritants should be taken up, as for instance bichloride fomentations, cataplasma, kaolini, turpentine stupes, the application of cantharidal blister or plasters.

Cupping in its various forms, particularly the use of ordinary wet and dry cups. Cupping has to a certain extent gone out of date, but appears with us again under the title of the Bier hyperaemic treatment which latter certainly is very little different from our old dry cups.

Caustics, their application and care, also the antidotes for overaction or poisoning by same.

SURGICAL NURSING.

1st. Under this head we should first take up the subject of bandaging. We usually describe and illustrate 3 types, the roller, handkerchief and the special bandages.

2nd. The simple roller and the fixed rollers are described in general, their preparation and uses. I find it is a good thing to have the apprentices manufacture the various types of bandages and in this way they become firmly fixed in their minds. In making up bandages as to size and length I have found the method recommended by Dr. Stokes, Surgeon General of the Navy, to be useful and easy to remember, viz:

½ inch bandages to be 1 yard long.
1 inch bandages to be 3 yards long.
2 inch bandages to be 6 yards long.
3 inch bandages to be 9 yards long.
4 inch bandages to be 10 yards long.

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After the roller bandage has been manufactured, we should make up the handkerchief type and then the many tailed, T bandage, Scultetus, etc. In teaching bandaging the entire subject should be taught by practical demonstrations. Take up first the use of the simple spiral, then figure of eight, the spiral reverse, the spicas of shoulder, figures of eight of chest, then the bandages of hands, fingers and feet, then the hip spicas and head bandages, in other words, the easiest first and gradually approach the more difficult ones.

3rd. Surgical instruments and surgical apparatus.

This is a subject which is neglected in almost every text book on surgery or nursing. It is never or almost never taught in a medical school or a nurse's class room. Everyone who knows anything about the subject of surgical instruments you will find has picked it up for himself often after many annoying situations.

I have always been impressed with the fact that the instruments in general use should be known to every nurse as well as to the doctor. Why? In the first place it is a great loss of time to the doctor in an operating room to pick out his own instruments and even then get some of them wrong. Second, very frequently a nurse is called on to hand instruments to the surgeon during an operation and when we ask for a scalpel we do not expect to receive a trochar and canula. In all well conducted hospitals and sick bays on board ship all that should be necessary is to say get ready for an appendectomy or whatever the case should be and our nurse should know the instruments required for that operation. This may seem to some a difficult procedure, but when properly approached it is one of the simplest. We pick up for instance a scalpel from our general operating case which we will take up first, and explain what it is and its uses, a bistoury is next taken up and the difference between scalpels and bistourys explained, also all the cutting instruments. I usually get good results from explaining the derivation of the word for instance in tenatome, teno referring to a tendon and ome referring to a cutting instrument, then we have tenatome an instrument to cut a tendon with, the same applying to urethratome, etc.

After we have mastered the common instruments in the general operating case, we take up the genito-urinary case and finally reach the most difficult instruments in the eye case.

We should also take up the various apparatus of the de-

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partment, as braces, fracture boxes, sterilizers, their care and management.

I have found this a subject in which hospital apprentices are particularly keen and grasp very quickly. When the uses of instruments and appliances are explained as we go along, we find that in a short time it is possible to so group our instruments that the men know what is wanted for the common operations.

4th. Surgical Technique.

It has always been my experience that this is one of the most difficult subjects to impress men with. Women master the operating room technique much quicker than do men. In the first place it is much easier to impress a woman with the importance of this work and particularly the detail, because it is attention to detail that makes her successful in woman's work. Men have a tendency to slight the little things, and as they are the things which count for so much, it is those little points that we must dwell on. For instance, a man who goes into an operating or a dressing room for the first few times may accidentally touch an unsterile object with his clean hands and it is so easy for him to say to himself, "Oh well, that was just a little thing and did not amount to anything, I can easily put my hands in bichloride if the doctor sees it."

Only a few days ago I was instructing a man, who is looked upon as being careful, in the use of the catheter. He thoroughly prepared everything and with the catheter in one hand, he picked up an unsterile package with the other.

Before anyone is allowed to engage in any surgical work he should be allowed to watch the others and be thoroughly impressed with the dictum "hands off." Apprentices should then be instructed in the sterilization of hands and arms and the dressing of unsterile cases; while this is going on the aseptic operation drill should be taken up in the rough and gradually worked into the finer points of preparation of patients for the various operations, preparations of dressings, ligatures, and the various splints, instruments, etc. Hospital and emergency preparations are of particular importance in the Naval service.

After the general operating room technique has been gone over, assistance at the wound, handling of instruments, the use of retractors, sponging and methods of grasping vessels with haemostats, ligating, etc., should be taught. To some it may seem that the

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latter is very advanced work, but I have been impressed by the great necessity of it in the service. By doing these things we stimulate confidence in a man, so that when he sees danger ahead he will not run away from it or become excited. On one occasion I saw a male nurse running at breakneck speed across the yard with a man who was bleeding severely from a wounded palmar arch. In the excitement he had forgotten all that he ever knew about first aid or the arrest of hemorrhage, because he became excited and lacked the little confidence necessary.

Anesthetics and their use should be taught. I regret to say that I know medical officers who are opposed to teaching hospital corps men the use of anesthetics. Those who do this are certainly liable to rue it later. Every man in the hospital corps should know how to administer anesthetics. In Nicaragua 250 anesthetics were given by a member of my hospital corps and a fine time we should have had, had I not thoroughly instructed him in their use beforehand.

In taking up this subject we should begin with the drugs themselves and have a fairly good idea of their actions on the body before we begin their use.

The methods of use and danger signals should be taught and all the methods of resuscitation.

HYGIENE.

This should be taken up by first explaining what it is and its various subdivisions. A general idea should then be given of personal and house hygiene.

Disease transmission and its prevention should come under this head and the important infectious and contagious diseases should be taken up, and their method of spread, prevention and control.

Mosquitoes, gnats, flies and their importance, disinfection and sterilization should also be taught.

I think that the foregoing will usually suffice to prepare a man for advancement. When a man has reached the grade of hospital apprentice, first class, he should be instructed in the clerical work of the department, elementary chemistry and pharmacy, giving him a good basis upon which to build up. Laboratory assistants are much needed in the service and the various clinical apparatus and their care should be taught, also the essentials of post mortem work.

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Nurses, particularly those who have had little education, very frequently have great difficulty in picking up and retaining medical technical words. It is surprising how easy these things are mastered by a simple scheme, viz, take a number of the more important prefixes and their meanings and examples, as;

extra, without; example extra abdominal, outside abdomen.
supra, above; example suprascapular, above scapula.
intra, within; example intrathoracic, within thorax.
inter, between; example intercosal, between ribs.

Suffixes.
itis, inflammation; example appendicitis, inflamed appendix.
ectomy, removal of; example gastrectomy, removal of the stomach.
logy, a study of; example bacteriology, a study of bacteria.

Parts.
gastro refers to the stomach as gastritis.
stoma refers to the mouth as stomatitis.
nephro refers to the kidney as nephritis.

by taking up perhaps 60 or 70 of these points and combining parts, prefixes and suffixes we are enabled to give the nurses a large vocabulary and a good basis for a knowledge of the technical terms used.

I find that this is a subject that, given in this manner, is picked up very easily. After the few forms are gotten together a case paper is written out replete with technical terms and the men are required to work it out.

CLERICAL WORK.

The various forms should be taught and their methods of preparation and transmission. The actual forms must be shown and demonstrated; this is an easy and very important part of our hospital corps work. The medical instruction book is of the greatest value in teaching this work.

Books.

I have found the following books to be of considerable value in this work:

Mason's Handbook for the Hospital Corps.
Brickner, Surgical Assistant.
Bewley's Quiz Book of Nursing.

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Coleman's Syllabus of Materia Medica.
Senn's Nurses' Guide to the Operating Room.
Stoney's Surgical Technique and Bacteriology.
Stoney's Materia Medica for Nurses.
Achivard's Bacteriology.
Arnheil, Clinical Microscopy.
Instruction for Medical Officers, U. S. Navy.

In reviewing this subject it may appear extensive, but it is really surprising when the duties are properly mapped out (and this must all depend on the individual requirement) what a large amount of work can be covered in a short time.

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EXAMINATION PROBLEM FOR OFFICERS OF THE MEDICAL CORPS, U. S. ARMY.*

SITUATION.

A RED Army consisting of 3 Divisions and 1 Regiment of Heavy Field Artillery has disembarked at New Bedford and, utilizing that place as a base, has advanced with the object of capturing Boston.

On 1st June, 1910, the Red Field Army has reached positions as follows:

1st Division around Rockland; 2nd Division around North Abington; 3rd Division around Brookville; Army Headquarters and 1st Heavy Field Artillery at Abington.

All railroads have been destroyed, so that all communication with the base at New Bedford is by wagon road.

On the afternoon of 1st June, 1910, the Commanding General of the Red Army issues the following order:

"Red Field Army,
"Abington, 1 June, 1910, 1 p. m.

"Field Orders, No. 1.

"1. The enemy, about 2 divisions strong, holds a slightly intrenched position extending from the Neponset River along the southern edge of the Great Blue Hills and via Mayflower Park, South Weymouth, Queen Anne Corners, Prospect Hill to Cohasset.

"2. This army will break through enemy's extended front tomorrow. The attack will begin at 8 a. m.

"3 (a). The 1st Division will attack that section of the enemy's line lying between Great Pond and Accord Pond so as to prevent the enemy from reinforcing his right, and will cover the right flank of the army.

"(b). The 2nd Division will attack and carry that portion of the enemy's line between Mayflower Park and Great Pond.

"(c). The 3rd Division will attack that portion of the enemy's line between Pond St. and Mayflower Park so as to prevent the

*This problem constituted part of a recent examination for promotion of majors of the Medical Corps, U. S. Army. The maps on which the problem was based have not been reproduced.

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enemy from moving troops toward the east, and will cover the left flank of the army.

"One brigade of this division will be held at 44 at the disposal of the army commander.

"The 3rd Division will leave the road 47-48 free.

"(d). The 1st Heavy Field Artillery will take position just north of West Abington and will support the 2nd Division.

"(e). The Chief Surgeon of the Army will consult with the Chief Surgeon of the lines of communication as to the positions of the evacuation hospitals and will supervise the location of the field hospitals, giving such instructions to the Chief Surgeons of Divisions in the matter of the disposition of the other sanitary units of their respective Divisions, the general evacuation route and the lines assigned to each Division for the evacuation of their wounded, as will best meet the movements of the troops and conditions of battle as set forth in this order and the orders of the Division Commanders based thereon.

"The Bedford Street road via Bridgewater, 190, 226, 225, 248, 250 to New Bedford will be reserved for ammunition and supply trains, and will not be used for the evacuation of the wounded.

"(x). Divisions will establish wire communications between their headquarters and army headquarters. In addition the 3rd Division will connect army headquarters with 44 and West Abington.

"4. Army headquarters will remain at Abington.

"By command, etc."

Upon receipt of the above orders, the Division Commanders caused detailed reconnaissances to be made.

With the information obtained from these reconnaissances the Division Commanders were able to select the most advanced line upon which the preliminary deployment could be made. They were also to select exact positions for the artillery and the officers of that arm had opportunity to thoroughly examine their positions, prepare firing data, etc.

The reconnaissance showed that the country is rather heavily wooded and that, large open spaces are only to be found, as a rule, around the towns.

To facilitate the preliminary deployment and to provide means of communication for use during the battle, connecting roads, practicable for all arms, were opened as follows:

"(a) From the road fork 1 mile northeast of the (N) of North

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Abington to a point ½ mile east of south of 56, and thence to the schoolhouse 1 mile southwest of 57.

"(b From a point ½ mile north of the (N) of North Abington to a point 1 mile southeast of 49.

"(c) From a point ½ mile southwest of 50 to the right angle road turn 1½ miles northwest of 50, and thence due west to connect with the road 47-48.

"(d) From a point ½ mile southwest of 47 to a point ½ mile northeast of 46."

Based upon the Army Commander's orders and upon their reconnaissances, the Division Commanders issued orders as follows:

"1st Division,
"Rockland, 1 June, 1910, 6 p. m.

"Field Orders, No. 11.

"1. The enemy, in inferior strength, holds a slightly intrenched line form the Neponset River through Mayflower Park, South Weymouth, Queen Anne Corners, and Prospect Hill to Cohasset.

"Our army will attack and break the enemy's line tomorrow. Our 2nd Division will attack between Mayflower and Great Pond S. W. of South Weymouth).

"2. This Division will attack between Great Pond and Accord Pond and will cover the right of the army.

"3(a) The 1st Cavalry will reach Assinippi at 6 a. m. will cover all roads to the east, and will send strong patrols toward 24 and Queen Anne Corners.

"(b) Brigadier General A with the 1st Brigade and the 1st Field Artillery will be in position at 7 a. m. with his infantry (deployed for attack) on an east and west line through 57, (the right holding the road running north from 60 and the left resting on Old Swamp River) and with his artillery near 57.

"(c) Brigadier General B with the 2d Brigade and the 2d Field artillery will be in position at 7 a. m. with his infantry (deployed for attack on an east and west line through 56, (the right resting on Old Swamp River and the left on Great Pond) and with his artillery near 57.

"(d) The 3rd Brigade and the 1st Battalion Engineers will be massed at 7.30 a. m. at the schoolhouse 1 mile southwest of 57 and will form the reserve.

"(e) The signal troops will connect division headquarters with

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army headquarters, with the several brigades, with the artillery, the cavalry, the ammunition trains, and the field trains.

"(x) The signal for the advance will be given by the Division Commander.

"The artillery will not be moved from its indicated positions without the authority of the Division Commnader.

"Outposts will be relieved when their commands cross the line of outposts.

"4. Sanitary troops * * *

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"Field trains will assemble at 7.20 a. m. at West Hanover and be held ready to move.

"The ammunition train will park at 7 a. m. in Rockland, north of the railroad.

"5. The Division Commander will be at the schoolhouse 1 mile southeast of 57 after 7 a. m.

"By command, etc."

"2d Division,
"North Abington,
"1 June, 1910, 6 p. m.

"Field Orders, No. 22.

"1. The enemy, in inferior strength, holds a slightly intreached line from the Neponset River through Mayflower Park, South Weymouth, Queen Anne Corners to Cohasset.

"Our army will attack and break the enemy's line tomorrow.

"Our 1st Division will attack east of Great Pond. Our 3d Division will attack west of Mayflower Park.

"2. This Division will attack and break the enemy's line between Great Pond and Mayflower Park.

"3 (a) The 1st Brigade will move by the road leading north from North Abington and by the new cut road so as to be deployed ready for attack along the road leading south of east from 49 at 7 a. m. This brigade will attack between Great Pond and Cranberry Pond.

"(b) The 2nd Brigade will move by the road leading southwest from North Abington, via 50, and by the new cut road to 48 so as to be deployed ready for attack on a line through 48 at 7 a. m.

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"This brigade will attack that section of the enemy's line between Cranberry Pond and Mayflower Park.

"(e) The Field Artillery Brigade escorted by the 1st Cavalry will move by the road West Abington—49 so as to be in position near 49 at 7 a. m.

"(d) The 3rd Brigade will follow the 2nd Brigade to Holbrook (west) where it will be massed and held as reserve.

"(e) The 2nd Battalion Engineers will detach one company to report to the Commanding General of each infantry brigade.

"(f) The signal troops will connect division headquarters with army headquarters, with the headquarters of each brigade, with the artillery, with the field trains, and with the ammunition train.

"(x) The outposts will be relieved when their respective commands cross the outpost line.

"The signal for attack will be given by the Division Commander.

"4. The sanitary troops * * *

* * * * * *

"The field trains will assemble at Abington at 8 a. m. and will be held ready to move. The ammunition train will park at 50 at 7.30 a. m.

"5. Division headquarters will be at Holbrook (west) after 7 a. m

"By command, etc."

"3d Division,
"Brookville,
1 June, 6 p. m.

"Field Orders, No. 33.

"1. The enemy, in inferior strength, holds a slightly intrenched line extending from the Neponset River along the southern edge of the Great Blue Hills and via the northern edge of Great Pond (west of South Braintree), Mayflower Park, South Weymouth to Cohasset.

"Our army will attack and break the enemy's line tomorrow.

"Our 2nd Division will attack east of Mayflower Park.

"2. This division will attack between Mayflower Park and Pond St. and will cover the left flank of the army.

"3 (a) The 1st Brigade will move by the road 45-44 so as to

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be deployed ready for attack on a line through the road forks 1 mile northeast of 44 at 7 a. m.

"The attack of this brigade will be in the direction of 8.

"(b) The 4th Infantry will move via 43, 40 and 89 so as to reach 7 by 7 a. m. At 7 this regiment will take position so as to cover all roads leading to the north from 7 to 6.

"(c) The Field Artillery Brigade will follow the 1st Brigade and will take position between 44 and 7.

"(d) The 2nd and 3rd Brigades (less 4th Infantry) and the 3rd Battalion Engineers (Brigadier General B commanding) will march at 6 a. m. via the road 43-44 to 44 where the 3rd Brigade will form up east of 44 and the 2nd Brigade and the Engineers will form up to the west.

"The 3rd Brigade will be held at the disposal of the Army Commander.

"The 2nd Brigade (less 4th Infantry) and the 3rd Battalion Engineers will be held at the disposal of the Division Commander.

"(e) The 3rd Cavalry will move by the new cut road and 41 so as to reach Stoughton by 7 a. m.

"From Stoughton the Cavalry will cover the army's left flank.

"Strong patrols will be sent to gain close contact with the enemy's position along the Great Blue Hills.

"(f) The signal troops will connect division headquarters with army headquarters, with 7, with Stoughton, with Avon and with Brockton.

"They will also connect army headquarters with West Abington.

"(x) The signal for the attack will be given by the Division Commander.

"Outposts will be relieved when their respective commands cross the line of outposts.

"4. Sanitary troops * * *

* * * * * *

"Field trains will assemble at Brockton at 8 a. m. and be held ready to move.

"The ammunition train will park at Avon at 7.30 a. m.

"5. Division headquarters will be at 44 after 7 a. m.

"By command, etc."

NOTE.—All organizations are organized as prescribed in Field Service Regulations.

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The organization of the regiment of heavy field artillery is identical with that of other regiments of field artillery.

Boston is just off the northwest corner of the map.

The casualties of the 2nd Red Division are about 12 per cent, and of the 1st and 3rd Divisions about 3 per cent. The enemy has left on the field not able to be moved 200 wounded, of which 120 are in front of 2nd Division, and, of wounded requiring transportation 330, all in front of 2nd Division.

REQUIRED.

1. What instructions and information would you issue to Division Chief Surgeons in preparation for the battle?

2. The enemy's center having been broken at 1 p. m. by the Red 2nd Division, and he being in full retreat towards his base, formulate the instructions which with the approval of the Chief of Staff you would issue to Division Chief Surgeons at this time. These will include

(a) Location and number of field hospitals established.

(b) Indicate the use of ambulance companies.

(c) Locate the Reserve Medical Supplies for each Division.

3. Formulate the orders which the Chief Surgeon, 2nd Division should give to the medical units of his Diviison and to those which have been sent to reenforce him.

4. Locate the dressing stations and station for slightly wounded for the 2nd Division with reasons for selection of these locations.

5. Indicate on the map where you might properly expect to find the Regimental first-aid stations of the 2nd Division.

6. Formulate the plan for the evacuation of the wounded from the field of losses to the base, and state fully the details of this evacuation.

This statement should show (a) the number, size, location, and character of shelter, &c., of the evacuation hospitals and rest stations; (b) the routes of evacuation; (c) a full description of the transport columns and other means of transportation used. Give number and character of vehicles used, and methods of adaptation for ambulance use; (d) Enumerate the personnel used under the orders of the Chief Surgeon, lines of communication, for the evacuation, including Red Cross personnel and civilians (drivers, &c.)

7. Describe the sanitary service of the base showing the sanitary units, hospitals, and character of service.

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MAJOR JAMES EVELYN PILCHER.

Major James Evelyn Pilcher after a protracted illness died at Savannah, Ga., on Saturday, April 8, 1911.

Major Pilcher through his long incumbency of the office of Secretary of the Association and the co-incident editorship of its Journal was well known to all members except those of very recent date. Too much could not be said on the subject of the value of his services to the Association.

James Evelyn Pilcher was born at Adrian, Michigan, on March 18, 1857. His preliminary education was obtained at the public and high schools of his state. His collegiate record is as follows:

Michigan University, A. B., 1879; Illinois Wesleyan University, A. M. and Ph. D., 1887; Allegheny (Pa.) College, L. H. D., 1902.

He graduated from the Long Island College Hospital on June 23, 1880. Prior to his graduation in medicine he became curator of the Brooklyn Anatomical and Surgical Society, and interested in the publication of the Society's transactions, which were then issued in monthly parts as the *Annals of the Anatomical and Surgical Society.* In 1881, the Society having determined to cease publishing its proceedings, Dr. Pilcher became associated with his brother, Dr. Lewis S. Pilcher, and his friend, Dr. George R. Fowler, in the establishment of the *Annals of Anatomy and Surgery,* a successor to the former publication, and the precursor of the *Annals of Surgery,* now so widely known in both hemispheres. He retained his connection with this journal until he entered the military service.

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Major Pilcher was commissioned a 1st Lieutenant and Assistant Surgeon, U. S. Army, in 1883. Five years later he reached the grade of Captain and Assistant Surgeon, retiring from active service on account of disability in 1899. He was distinguished by a commission as Major and Brigade Surgeon, U. S. V., dated June 9, 1898, in which grade he served during the Spanish-American War. In Major Pilcher's early Army career he went from Army post to Army post in the usual manner, doing his share of field service meanwhile. In the Spanish-American War he occupied the following important positions:

Chief Surgeon United States Forces at Jacksonville, Fla., May 25-June 1, 1898.

Chief Surgeon, 2d Division, 7th Army Corps, June 1-June 15, 1898.

Executive Officer of Chief Surgeon's Office and Medical Supply Officer, 7th Army Corps, June 15-December 1, 1898.

Acting Chief Surgeon 7th Army Corps, June 25-28, 1898.

Medical Supply Officer, U. S. Army, at Savannah, Ga., December 1, 1898-May 10, 1899.

Chief Surgeon of United States Forces at Savannah, Ga., January 5, 1899-March 10, 1899.

For points as to ancestry and genealogy, see "The Life and Labors of Elijah Holmes Pilcher," "Distinguished Officers of the Army and Navy" and "The Columbus Four Hundred."

Major Pilcher was—

Managing Editor Annals of Anatomy and Surgery, 1881-1883.

Office Editor Annals of Surgery, 1887-1889, and Contributing Editor, 1889-1898.

Editor Health Department, New York Christian Advocate, 1887-1895.

Associate Editor Columbus Medical Journal, 1896-1899.

Collaborator of "Janus," of Amsterdam, Holland, a Journal of Medical History, 1897.

Compiler of the Pennsylvania Archives, Fourth Series.

Editor of the Proceedings of the American Medical Editors' Association, 1906.

Editor of the Proceedings of the Association of Military Surgeons of the United States, 1897, and revised edition of 1903.

Editor of the Journal of the Association of Military Surgeons of the United States, 1901-1906.

Editor of the Military Surgeon, 1907-1909.

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Translator of—

Tillaux's Topographical Anatomy. From the French, imp. 8vo. pp. 1086. Unpublished.

Mundinus' Anatomy. From mediaeval Latin. 8vo. pp. 140.

Pierre Franco's Brief Surgery. From mediaeval French. 8vo. pp. 92. Unpublished.

Lecturer on Military Hygiene, Starling Medical College, 1896.

Professor of Military Surgery, Ohio Medical University, 1896-1897.

Professor of Military Surgery, Creighton Medical College, 1897-1899.

Professor of Anatomy and Embryology, Dickinson College, 1899-1900.

Emeritus Professor of Military Surgery, Ohio Medical University, 1898-1907.

Professor of Medical Jurisprudence, Dickinson School of Law, 1899-1909.

Professor of Sociology, Dickinson College, 1900-1903.

Curator of the Anatomical and Surgical Society of Brooklyn, N. Y., 1880-1883.

Assistant Secretary, Association of Military Surgeons of the United States, 1895-1896.

Secretary of the Association of Military Surgeons of the United States, 1897-1899.

Permanent Secretary of the Association of Military Surgeons of the United States, 1901-1909.

Honorary Fellow of the American Academy of Railway Surgery.

Honorary Fellow of the Columbus Academy of Medicine.

Honorary Member of the Association of Military Surgeons of the State of Ohio.

Honorary Member of the Ohio State Medical Society.

Honorary Member of the Phi Beta Kappa Society (Alpha Chapter of Pennsylvania).

Honorary Member of the Cumberland County Medical Society (Censor 1907-1908).

Life Member of the Association of Military Surgeons of the United States (Enno Sander Prize Gold Medallist, 1906).

Corresponding Member of the Societe de Medecine Militaires of France.

Fellow of the American Academy of Medicine.

Member of the American Medical Association.

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Member of the American Medical Editors' Association (First Vice President 1904-1906, President 1906-1907).

Member of the Cumberland Valley Medical Association (First Vice President 1903-1904, President 1905-1906).

Member of the Fifth Censorial District Medical Association of Pennsylvania.

Member of the American Association for the Advancement of Science, 1902-1903.

Member of the American Economic Association, 1902-1903.

Member of the Military Service Institution of the United States, (Member of Council 1887-1889).

Compatriot of the Sons of the American Revolution, 1897-1906 (Medal for Service in the Spanish War).

Companion of the Order of Foreign Wars of the United States, 1898-1906.

Incorporator, Director and Member of Advisory Com. Nat. First Aid Association of America, 1906.

Author of First Aid in Illness and Injury. 8vo. pp. 322.
English Edition, London, 1892.
American Editions, New York, 1892, 1894, 1895, 1897, 1898, 1899, 1901, 1904, 1906.

Author of Life and Labors of Elijah Holmes Pilcher. roy. 8vo. pp. 142. New York, 1893.

Author of the Columbus Book of the Military Surgeons. 8vo. pp. 100. Columbus, 1897.

Author of the Seals and Arms of Pennsylvania. roy. 8vo. Harrisburg, 1902.

Author of the Surgeon Generals of the United States Army. 8vo. pp. 114. Carlisle, Pa., 1905.

Author of Introductions to and Reviser of Manuscript of the Index to the Methodist Quarterly Review, 1884.

Author, with others, of the Reference Handbook of Medical Sciences. 4to. New York, 1888, 1893.

One of the authors of Kelley's Cyclopedia of American Medical Biography.

One of the authors of the Handwurterbuch des Militar-Sanitaswesens.

Author of the Enno Sander Prize Essay on "The Training of the Medical Officer of the State Forces to Best Qualify Him for Local Service and for Mobilization with National Troops" and forty or fifty other monographs and addresses on scientific and

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general subjects, and of several hundred contributions to periodical literature.

His Society Memberships were as follows:

(In addition to membership already recorded).

Member of the Army Mutual Aid Association.

Member of the Army Cooperative Fire Association (Inactive).

Honorary Member of the Belles Lettres Literary Society of Dickinson College.

Honorary Member of the Delta Chi Fraternity.

Member of St. Johns' Lodge Free and Accepted Masons, No. 260, Pennsylvania.

Member of St. John's Royal Arch Chapter, No. 171 of Pennsylvania.

Member of True Friends Lodge of Knights of Pythias, No. 56 of Pennsylvania.

Honorary Member Carlisle Council No. 574, Order of United Americans.

Member Carlisle Lodge, No. 578, B. P. O. E. (Esteemed Lecturing Knight, 1907).

Member of the Methodist Episcopal Church since 1865.

Member Oxford Club, Carlisle, Pa., President from organization, 1906.

Honorary Member Carlisle Civic Club.

Member of the Cumberland County Press League, (President 1906).

Member Carlisle Board of Health 1906-

Member (non resident) of the Columbus Club.

Member of the Army and Navy Club of Washington, D. C.

Corresponding Member of the Buffalo Historical Society.

Corresponding Member of the "Old Northwest" Genealogical Society.

Honorary Vice President for Pennsylvania, 1901.

His literary career was distinguished as follows:

General Medical Articles.

The Annals and Achievements of American Surgery. Chicago, 1890. 4to. pp. 8.

Cocaine as an Anesthetic. St. Louis, 1885. 8vo. pp. 16.

Kocher's Bismuth Treatment of Wounds. Brooklyn, N. Y. 1883. 8vo. pp. 8.

A New Classification of Tumors. St. Louis. 1887. 8vo. pp. 16.

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Prevesical Phlegmons. Brooklyn. 1882. 8vo. pp. 12.
Skin and Epidermic Grafting. Brooklyn. 1881. pp. 8.
The Surgery of the Liver. St. Louis. 1887. 8vo. pp. 24.
Message from the Orient. Athens, Pa. 4to. pp. 5.
The Physicians Duty to the Public. Scotland, Pa. 16mo. pp. 9.
The Scientific Side of Medicine. The Inaugural Address at the Opening of the Ohio Medical University. Columbus. 1896. 8vo. pp. 16.
On Vivisection and Anti-Vivisection. Columbus. 1895. 8vo. pp. 6.

Medical History.

The Anatomy of Mundinus. Columbus. 1896. 8vo. pp. 15.
Chauliac and Mondeville. Philadelphia. 1895 8vo. pp. 24.
Mundinus and the Anatomy of the Middle Ages. Columbus 1896. 8vo. pp. 16.
Some Sixteenth Century Surgery. Philadelphia. 1896. 8vo. pp. 36.

First Aid.

First Aid in Railway Emergencies. Chicago. 1897. 8vo. pp. 26.
Methods of Instruction in First Aid. Cincinnati. 1896. 8vo. pp. 20.
Method of Instruction in First Aid. Journal of the Military Service Institution, No. 84.

Military Medical Articles.

The Building of the Soldier. Philadelphia 1892. 8vo. pp. 20.
Handbook of the Association of Military Surgeons of the United States, 1901-1902. Carlisle, Pa. 1901. 8vo. pp. 60.
The Influence of Certain Modern Military Conditions in Modifying the Lines of Surgical Aid in Battle. Columbus. 1897. 8vo. pp. 8.
Lines of Surgical Aid in Battle. Columbus, O. 1897. 8vo. pp. 8.
Manual of the Association of Military Surgeons. Columbus. 1897. 8vo. pp. 42.
Medico-Military Services of the United States of America Berlin, Germany. 1907.
A New Field of Honor. New York. 1888. 8vo. pp. 16.
The Place of Physical Training in the Military Service. St. Louis. 1894. 8vo. pp. 12.

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The Present Status of Military Medicine and Surgery. Columbus, O. 1896. 8vo. pp. 6.

The Transportation of the Disabled. New York. 1888. 8vo. pp. 28.

Transportation of the Disabled on Land. New York. 1888 and 1892. 4to. pp. 48.

The Uniform of the West Point Cadet. New York. 1889. 8vo. pp. 12.

Medical Journalistic Papers.

The Future of Medical Journalism (Presidential Address delivered before the American Medical Editors' Association, 1907). New York. 1907. small 8vo. pp. 12.

Military Medical Journalism at the Beginning of the Twentieth Century. Columbus, Ohio. 1903. 8vo. pp. 8.

The Profession of Medical Journalism. New York. 1906. 8vo. pp. 6.

General Literary Articles.

Dakota, Fort Abraham Lincoln and General Custer. Brooklyn. 1883. 4vo. pp. 6.

One Sioux Dance. Carlisle. 1899. 8vo. pp. 12.

Outlawry on the Mexican Border. New York. 1891. 8vo. pp. 10.

Pennsylvania Historical Articles.

Biographical Sketches of the Governors of Pennsylvania from William Penn to William Stone—in the Fourth Series of Pennsylvania Archives.

Pennsylvania Archives as they Apply to Cumberland County. Carlisle, Pa. 1907. 8vo. pp. 16.

Sketch of Dickinson College in the Biennial Report on Higher Education in Pennsylvania. Harrisburg. 1900. 8vo. pp. 6.

Numerous First Aid Lectures.

Lecture on Litter Drill Before the Pennsylvania National Guard. 1888.

The Enlisted Soldier—An Essay Submitted in Competition for the Military Service Institution Gold Medal in 1885 and awarded honorable mention.

Lectures on Military Medicine, Surgery and Hygiene, delivered at the Ohio Medical University, Starling Medical College and Creighton Medical College.

General Lectures.

The Vagaries of Hymen.

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Unto the Third and Fourth Generation: A Study in Heredity.
The Man, the Woman and the Child.
The Building of a Nation.
The Armorial Bearings of the Commonwealth.
Stepping Stones of Success.
The Function of a Men's Club.
Savage Scenes on the Plains.
A Hundred of the World's Great Paintings, with Stereoptican Views.
Phases of Womanhood.
The Gentle Life.
The Medicine of the Dawning Century.
The Bug and the Public.

BRIEF SUMMARY OF THE SERVICES OF MAJOR JAMES EVELYN PILCHER IN CONNECTION WITH THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.

Major Pilcher joined the Association of Military Surgeons in 1894, immediately upon the opening of its membership to officers of the regular services. In 1897 he was made a life member of the Association by the committee of arrangements for the Columbus meeting, in recognition of his services as secretary of that committee. He was immediately appointed a member of a committee on Military Medical Journal, and made an investigation in which he demonstrated the feasibility of such a publication. He was appointed Assistant Secretary in 1895 and 1896, and elected Secretary in 1897, serving in the latter position until 1899, when obliged to retire on account of ill health. He was re-elected in 1901, and served until March 31st, 1909, making a total of over ten years of secretarial work for the Association. During the time of his occupancy of the office Major Pilcher acted less as a secretary than as an executive officer, supervising and keeping alive the work of the Association during the intervals between the annual meetings. He acted as a continuous committee on program, adjusting, arranging and largely securing by his personal efforts the material for the programs of the annual meetings. He edited Vol 7 of the Proceedings of the Association, reedited and reprinted Vol 3 of the Proceedings of the Association, and established the Journal of the Association of Military Surgeons of the United States.

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The high grade of the editorial work done by him on The Military Surgeon was recognized by his unsolicited election for two terms as First Vice President and finally as President of the American Medical Editors' Association, and by his selection by the Societe de Medicine Militaire Francais to represent the American Army on its list of members.

He prepared a card index of all the members of the Association which was continually up to date and from which the latest facts concerning each member were readily obtainable, and established a Personal Record system, by which the biographical facts concerning the lives of all the members are permanently preserved in such form as to be accessible at an instant's notice. He originated and for the most part conducted the plan of representation of medical departments of foreign armies at the annual meetings.

During his last seven years as secretary he was in most cases directly instrumental in securing the admission of 1,300 new active and associate members to the Association. During his service he issued no less than 175,000 journals or proceedings, from which wide circulation much credit has accrued to the Association of Military Surgeons and to American military medicine. He directly earned, received and expended for the use of the Association during seven years $27,708.64.

To the great regret of all members of the Association Major Pilcher in March, 1909, was compelled by ill health to resign the office which he had filled so well. At that time many of his fellow members testified in no uncertain terms of their sense of loss. To the pleasure of all Major Pilcher was able to attend the Washington meeting in 1909, but his familiar face was not seen at Richmond last year. On this occasion he was not forgotten by his comrades who by virtue of a resolution unanimously adopted telegraphed him extending salutations and regrets that he was absent from his long accustomed place. Major Pilcher immediately responded with best wishes for the continued prosperity of the Association.

This was no prefunctory statement on Major Pilcher's part. From the first day of his connection with the Association till the day of his death it always had his best wishes. During his long period of active service in connection with its affairs he labored early and late for its success, and no sacrifice of time on his part was esteemed too great if it only tended toward the good of the

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Association. Later, when serious illness and almost total blindness which added immeasurably to his burdens as editor compelled him to relinquish the position he had ably filled so long, in what he considered the best interests of the Association he relinquished them without an iota of jealousy toward his successor. In fact at that time and even since until illness precluded, his counsel and assistance were always available to the full extent of his powers.

The Association as such has sustained a severe loss in Major Pilcher's death and many members will receive the bad news with the sorrow which can only come from the rupture of a close and intimate comradeship for many years.

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Current Literature.

Titles marked with an asterisk (*) are abstracted below.

FRANCE.

Archives de Médecine et de Pharmacie Militaires.

March, 1911.

1. Contribution to the Study of Dementia Praecox Among Soldiers. Lanteaume.
2. Rare Form of Old Stricture of the Urethra. Labanowski.
3. *Systematic Refrigeration of the Abdomen in the Treatment of Typhoid Fever. Boyé.
4. *Lumbricoidosis and Perforation of the Intestine. Millard.
5. Suicide by Shooting. Baumelou.
6. Technique for Fixation of the Dressing after Operation for Phimosis. Rouquette and Perdrizet.

3. **Systematic Refrigeration of the Abdomen in the Treatment of Typhoid Fever.**—Boyé records two cases of typhoid treated by the constant application of ice bags over the entire abdomen. The ice is renewed every two hours and the bags are applied constantly except when the temperature is normal. Advantages: the temperature drops rapidly and the fever period is shortened; the method is simple and ought to be of value in epidemics; there are no contraindications as in the case of cold baths; the patient is kept quiet; no hemorrhage occurred in 19 cases treated by Lénez.

4. **Lumbricoidosis and Perforation of the Intestine.**—A case of death in a soldier after 15 days' illness with subacute peritonitis. Autopsy showed a purulent peritonitis with 21 ascaris worms in the exudate; the large intestine was normal; the lower part of the small intestine showed four ulcers; in the floor of one there was a pea sized perforation. 32 worms were found in the small intestine. Peyer patches and all other organs were normal. H. J. Nichols.

Bulletin de L'Académie de Médecine.

February 21, 1911.

7 Classification of Female Hermaphrodites. Magnan and S. Pozzi.
8 *The Plague in Astrachan and Manchuria. A. Chantemesse and M. Borrel.

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9 *Antityphoid Vaccination. H. Vincent.
10 Malformations of the Breast and Tumors. M. Letulle.

February 28, 1911.

11 *Antityphoid Vaccination. M. Vincent and M. Delorme.
12 The Control of Smallpox in French Colonies in Africa and Indo-China. M. Kermorgant.

March 7, 1911.

13 Report upon Mineral Waters and Springs. M. Meillere.
14 Report upon the Employment of Arsenical Salts in Agriculture. Drs. Cazeneuve, Chantemesse, A. Gautier, Hanriot, Laveran, Moreu, Regnard, Thoinot, Weiss, Yvon and Duguet.

March 14, 1911.

15 *Three Cases of Cerebral Abscess Following Abscess of the Liver. M. Couteaud and M. Peyrot.
16 *A New Case of Laboratory Infection with *Micrococcus melitensis*, Illustrating the Necessity of Employing Formalized Cultures in Sero-Diagnosis. M. Ferdinand Widal.
17 The Etiology of Strabismic Amblyopia. M. Lagrange.

8. **The Plague in Manchuria.**—The authors, Chantemesse and Borrel, review the sanitary questions connected with the suppression of the plague epidemic which is now raging in Manchuria. They state that the epidemic originated among the trappers of tarabagan, a marmot related to the American woodchuck and prairie dog. Plague occurs in the pneumonic form in this animal, and several hunters developed the disease in October, 1910, after handling the skins of the animals. The diseases spread quickly among the Chinese in the vicinity, who fled into Manchuria, where it became epidemic in a short time. The extreme virulence of this outbreak may be judged by the statement of Haffkine, who has been in the plague area since December, that he has not seen a single case recover. On the other hand, among the persons he has vaccinated against plague not a single infection has occurred, although these individuals were constantly exposed. The authors speak of the uncertainty which exists as to the period of incubation and call attention to the extreme difficulty of eradicating the disease when it has once become firmly established in any locality. The rat and flea have had little, if anything, to do with this outbreak of plague, all of the cases being of the pneumonic type.

9 and 11. **Antityphoid Vaccination.**—The discussion of this subject was continued in the Academy upon Feb. 21, 1911, and

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upon Feb. 28, 1911, the Academy voted upon the question of accepting and recommending the procedure to the profession of France. M. Vincent read a valuable paper upon the results which have been accomplished by the method, illustrated by charts showing in a graphic manner the great reduction in the number of cases and deaths from typhoid which has followed its adoption in the armies of England, Germany, and the United States. The following resolution was voted upon and passed by the Academy:

"That the voluntary use of antityphoid vaccination should be recommended as a practical and rational means of diminishing the frequency and severity of typhoid fever in France and in the colonies.

"This recommendation is addressed to all whose profession, usual or accidental conditions of food or habitat, daily or frequent relations with persons or bacillus carriers, expose them to direct or indirect contagion.

The adoption of this recommendation closed one of the longest and most interesting discussions ever held in the Academy, the subject being considered in no less than six sessions, and it will be noted that the so-called "negative phase" is disregarded in the resolution which passed the Academy, as antityphoid vaccination is recommended to all exposed to typhoid infection.

15. **Cerebral Abscess Following Abscess of the Liver.**—Couteaud reports three cases of cerebral abscess following abscess of the liver, one of which came under his own observation, the other two being found in the records of the hospital at Cherbourg. All occurred in soldiers and all had a history of preexistent dysentery.

Case 1. A young soldier had been operated upon in Saigon for liver abscess in 1909. In April, 1910, he complained of vertigo and soon developed vomiting and convulsions, and crises resembling Jacksonian epilepsy. Violent headache was almost constant, and the condition was considered and treated as gumma of the brain until Couteaud suggested that it might be due to an abscess following the lesion in the liver. Upon autopsy a large abscess was found involving the temporal and occipital lobes, the pus of which was sterile.

Case 2 was similar as regards the symptoms and followed severe attacks of amoebic dysentery. Here again the diagnosis of

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gumma of the brain was made and antiluetic treatment was instituted. At autopsy an abscess was found in the liver and another in the frontal lobes of the brain.

Case 3 occurred in the person of a soldier who had suffered from dysentery in Indo-China. An abscess of the liver was evacuated and the patient improved, but in about two months complained of violent and continuous supra-orbital headache, which was followed by ptosis, intense fever, coma, hemiplegia, contracture of the arms, paralysis of the sphincters, etc. After a short remission of these symptoms, convulsions occurred and death soon followed. At autopsy five abscesses were found involving various portions of the brain.

M. Peyrot, in commenting upon this report, states that the first observation of a cerebral abscess following an abscess of the liver was made in 1864 by Ch. Julien, in Cochin-China, and that the same condition was reported by Kirmisson in 1885 and by M. Dubujadoux, in 1889. The complication is a very rare one but there is no doubt that in these cases the dysentery amoebae were the exciting cause of the condition. Peyrot considers in detail the symptomatology of these abscesses and states that surgical interference is useless.

16. **Laboratory Infection with Micrococcus Melitensis.**—Widal reports that his assistant infected himself with this organism while engaged in sero-diagnostic work, although he took the usual precautions to avoid infection. He suffered from a typical attack of Malta fever, and Widal urges this occurrence as a reason for using formalized cultures of the micrococcus in agglutination tests. The formalized cultures, according to Widal, are just as reliable as living cultures, and there is no danger incurred in using them. CHAS. F. CRAIG.

Le Caducée.

March 4. 1911.

18 *Death of Surgeon-Major Gerald Mesny from Pneumonic Plague, in Kharbin, Manchuria.

19 Impressions Produced in China. Dr. Ménard.

20 *Transportation of the Sick and Wounded in the Alps.

21 Experimental Shooting with the Automatic Pistol, System Mauser, of the Italian Army, Caliber 7mm. 63.

22 *Dogs for Sanitary Field Service.

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18. **Death of Surgeon-Major Gerald Mesny of the French Army, from Pneumonic Plague, in Kharbin, Manchuria.**—Public homage was recently rendered to the memory of Dr. Mesny in the French parliament, the medical officer "whose heroic death is a cause of patriotic pride and a noble example." Dr. Mesny, by special authority, was a member of the faculty of the Imperial Medical School in Tien-Tsin and one of the best known medical men in the province. He promptly responded to the call of the Chinese Government to fight the plague in Manchuria. Feeling himself attacked by the dread infection and realizing that he was lost, he repaired to the hospital (wrapped in a sheet dipped in corrosive sublimate) and hastened to put his affairs in order. Knowing the uselessness of treatment, he directed the attendants not to come near him for fear of contamination, requested that his wife be not notified until after his death, and recommended that his body be destroyed by fire, the great purifier.

20. **Transportation of Sick and Wounded in the Alps.**—The usual mode of transporting patients by the guides in the Swiss Mountains, is to wrap the entire body in a piece of canvas fastened to a long pole which is carried on the shoulders of two men. An opening is left to permit free breathing. In this manner the bearers have one free hand for use of the staff; they are besides safeguarded from slide and fall by the other guides to whom they are tied by a rope.

22. **Dogs for Sanitary Field Service.**—An "ambulance dog" club has recently been formed in Belgium, almost exactly along the lines adopted by the "National Society of the Sanitary Dog" of France. The breed selected in both countries is the shepherd dog. The object of the club is to train dogs for field work, to organize expositions, competitions, demonstrations, lectures and international congresses. Thus a reserve of trained dogs will always be on hand, to be placed, in the event of war, at the disposal of the medical department of the Army. Meanwhile, in order to insure proper organization and training, they are to be used in military maneuvers. They can also be requisitioned for use in case of catastrophes in which human lives are in danger.

March 18, 1911.

23 *The Carbine-pistol, a New Weapon.

24 *Typhoid Mortality in the French Army.

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25 *A New Way of Removing Tattooing. Dr. L. M. Tranchant.
26 The Plague in the Dutch East Indies.
27 *Flat Foot and Tuberculosis.

23. **The Carbine-pistol, a New Weapon.**—In Belgium, an automatic pistol is being manufactured for the Army, with initial velocity of 340 meters and efficient range of 200 to 300 meters. It is provided with a butt which transforms it into a carbine weighing only 1½ kilo. During the march or while at rest, the pistol is drawn within the butt and the weapon is suspended at the belt like any other side-arm. It is especially designed for the artillery, trains, engineer corps, troops of administration, gendarmerie, etc.

24. **Typhoid Mortality in the French Army.**—An interesting diagram, borrowed from the *Bulletin Medical,* shows that this mortality which amounted to 3 per thousand in 1883 has steadily and regularly declined until 1908, when it was only 0.41 for troops in France and 1.85 in Algeria and Tunis. Standing upon these figures, the editor deprecates the action very recently taken by the French Academy of Medicine in favor of antityphoid vaccination. He inquired from all his colleagues, casually met, whether they would subject their wives and children to this vaccination; they all answered negatively; this, in his opinion, "decides the question." The most efficacious prophylaxis, he contends, consists in the sanitation of garrisons rather than in such a "questionable measure" as vaccination.

25. **A New Way of Removing Tattooing.**—First the skin is vigorously rubbed until the outer epidermis comes off; then a paste of quick lime, just slacked, to which pulverized phosphorus (two tablespoonfuls to a pint) is added and thoroughly mixed, is applied to the tattooed surface and held by a bandage which is taken off two days later. The crust is left to dry and then fall off of itself, in about fifteen days. A second application should be made; a third is rarely necessary. Thus treated the tattooing disappears completely without the least scar.

27. **Flat Foot and Tuberculosis.**—Surgeons-Major Gorse and Dautheville, starting upon the hypothesis that flat foot is the result of an infectious process, often tuberculous, of the articulations involved, investigated the frequency of tuberculosis among

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flat-footed soldiers in comparison with men whose feet were normal. They found that 498 flat-footed men observed in the course of three years furnished a ratio of 7 per cent of tuberculous, whereas 12,390 men with normal feet examined during the same years and coming from the same regions, furnished only a proportion of 1.2 per cent. V. HAVARD.

GERMANY.

Deutsche Militarärztliche Zeitschrift.

February 5, 1911,

28 Heart Disease Among the Native Troops in Southwest Africa. Ohlemann.
29 *The Pignet Index in Recruiting. Ott.
30 *Iodine Catgut and Sterile Catgut. Budde.
31 The Clinical Picture of the "Snapping Hip." Schwahn.
32 Acute Diffuse Interstitial Myocarditis. V. Marenholtz.
33 Damage to the Ear by the Action of Sound. Brunzlow.

February 20, 1911.

34 Hysteria. Theophil Becker.
35 A Case of Sudden Death After Lumbar Puncture by Bleeding from the Brain. Spiller.
36 Tropococaine and Suprarenin for Anaesthetizing the Spinal Cord. Th. Budde.
37 Carbolic Acid Tablets of Sodium Phenol Phenolate. Th. Budde.
38 A Universal Injection Apparatus for Salvarsan. K. E. Boehncke.
39 Further Remarks on the Etiology of Parenchymmatous Keratitis and its Relation to Previous Injuries. Junius.

29. **The Pignet Index in Recruiting.**—Pignet, a French army medical officer, devised the following index: subtract from the height in centimeters the sum of the chest measurement on expiration in centimeters and the body weight in kilos. An index under 10 means very strong; 10-15, strong; 16-20 good; 21-25 fairly good; 26-30 weak; 31-35 very weak; above 35 entirely insufficient.

Ott used this index in comparing volunteers and regulars in the German Army and found that among the regulars less than 2% had an index over 30 while among the volunteers more than 10% had an index over 30. The index is a valuable aid in handling large numbers of applicants.

30. **Iodine Catgut and Sterile Catgut.**—Budde recommends dry catgut sterilized by heat for medical supply depots rather than iodine catgut. The former can easily be made into the lat-

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ter at any time by soaking it a few minutes in tincture of iodine while iodine catgut either moist or dry tends to deteriorate.

March 5, 1911.

40 The Significance of Germ Carriers for the Army. Lösener.
41 Military Offenses in Hysteria and the Question of Responsibility. Schanizer.
42 Regarding Litters for Cavalry. V. Bühnan.

March 20, 1911.

43 Address of the Surgeon General.
44 Preliminary Sick Report of the Royal Prussian Army, XII, XIII, and XIX Army Corps, Oct., 1909, to Sept., 1910.
45 *Investigation Among Recruits of the Garrison at Stettin for Typhoid Carriers. Hüne.
46 On the Improvement of Sanitary Officers in Field Service. Musehold.
47 A Portable Water Sterilizer for Field Service. Deeleman.

45. **Investigation Among Recruits of the Garrison at Stettin for Typhoid Carriers.**—An examination of 79 recruits showed 9 with an agglutination of 1-40 or over; one of these men showed typhoid bacilli in his stool. The recruits examined were selected by asking for a previous history of typhoid or of exposure to the disease in their family or neighborhood.

Convalescents should not be discharged from hospital until they show three negative examinations of feces and urine.

Convalescents who carry bacilli more than three months should be discharged. H. J. NICHOLS.

GREAT BRITAIN.

Journal of the Royal Army Medical Corps.

March, 1911.

48 On the Viability and Possible Variation of the Bacillus Typhosus. Major W. H. Morrocks, R. A. M. C.
49 The Value of Tuberculin. Lieutenant-Colonel F. H. Treherne, R. A. M. C.
50 Malaria in Kassala, 1909. Captain W. Byam, R. A. M. C.
51 *Report on a Forced March. Major M. Sykes, 5th Battalion Yorkshire Regiment.
52 Improvised Stretchers. Lieutenant-Colonel H. E. R. James, R. A. M. C. (Ret. Pay.)
53 *The Load of the Infantry Soldier. Lieutenant-Colonel C. H. Melville, R. A. M. C.
54 The Training of Territorial Medical Units. Captain W. A. Woodside, (T), R. A. M. C.

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51. **Report on a Forced March.**—A detachment of the 5th Battalion, Yorkshire Regiment, consisting of two officers, 50 enlisted men, with 2 draught horses and 2 saddle horses, marched 77 miles in 44 hours and 35 minutes. This time included all rests. The men were carefully prepared by systematic exercise, and very careful attention was given to their rations and rest while on the march. A chiropodist was included in the party and examined the feet at every stop. The men's legs were massaged four times. The equipment averaged 25 pounds in weight. One man fell out on account of injury, one was found to be suffering with hemorrhoids and sent home. Two men rode in wagon five and eight miles, respectively, on account of stitch, and one six miles on account of colic. One man with a new pair of boots developed sore feet.

At the end of the march, when the men extended for the attack, the officers acting as judges expressed themselves as satisfied that the men were quite fit to take part in an attack.

53. **The Load of the Infantry Soldier.**—Lieutenant-Colonel Melville says that the question of equipment of the infantry soldier, as it at present exists, may be said to date from the era of the Napoleonic wars. Until that time the importance of the strategical mobility was not so clearly recognized as later under the influence of Napoleon it came to be. The kit that the soldier carried appears to have been to a great extent his own business, and the baggage wagons carried as much as they could to supplement deficiencies.

At that time, owing to the comparatively short range of ballistic weapons, tactical mobility was by no means so serious a problem as it is now that the range of the rifle and the gun have so enormously increased. Owing to the improved methods of transportation, strategical mobility has become largely a mechanical question. On the other hand, the demand for tactical mobility, that is, mobility on the field of battle, has increased in proportion to the increase in the range of the rifle and gun. At 3,000 yards the soldier comes under effective artillery fire, and at 1,400 yards under effective infantry fire. Consequently, from within a mile and a half to a mile of the attacked position, all movements must be made with the utmost rapidity and from one piece of cover to another. The enormous size of modern armies entails extraordinary exertions on those troops which are from 20 to 30

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miles in the rear of those in touch with the enemy, if it is intended that they shall be present at the decisive moment.

The British soldier carries under 58 lbs., the French private 62½ lbs., the German 59, the Austrian 61½, and the Chasseurs Alpins, 70½ lbs. The Roman soldier of the Empire carried 80-odd lbs. In consideration of the way in which the rifle must be carried, the load of a soldier should not exceed 48½ lbs. For the purpose of discussion the equipment is divided into six classes, namely:—

(a) Armament, (b) Clothing actually worn, (c) Accoutrement, (d) Appliances for shelter, (e) Food and water carried, and lastly, (f) Necessaries.

The first class (a), which includes the rifle, side arms, ammunition, entrenching tools, and cleaning material, cannot well be interfered with. The weight of this is a little over 22 lbs. The second class (b), weighing about 13 lbs., cannot be reduced except at the expense of health. The accoutrement at present weighs about 8½ lbs. There is here a distinct room for improvement. The water bottle and mess tin should be made of aluminum, and the belts and braces of light stout webbing, or rather of girthing. The haversack should also be made of lighter material. On the whole about 2½ lbs. could be saved in this way, reducing the weight of this class to 6 lbs. Under the head (d) the author includes the shelter tent and overcoat. He states that the British soldier has not found the shelter tent necessary and he would omit it. The present overcoat weighs 6 lbs. 3 oz. By using instead a pea jacket and a pair of stout overalls, such as men use for motor bicycling, or policemen wear on point duty, the weight could be reduced to five lbs. 11 oz. By adopting a similar material to that of which the German overcoat is made, which is excellent, 3 lbs. could be saved. This would leave about 4 lbs. for the last two classes. The water weighs 2 lbs. 3 oz. The soldier should carry 6½ lbs. of rations. This leaves a deficit of a little less than 5 lbs. Class (f) may be divided into spare linen and other clothes, personal cleaning material, drinking cup and cutlery and personal document—e. g., small book. Lieut. Colonel Melville does not consider that these are really necessary, excepting the cup, cutlery and book, and would relieve the soldier of all the others. This makes the total weight to be carried a little over 54 lbs., and he does not see how it can be reduced below this figure.

ALBERT G. LOVE.

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Journal of the Royal Institute of Public Health.

March, 1911.

55 *The Recent Epidemiological and Experimental Researches on Infantile Paralysis. C. Levaditi, M. D.

56 The Eugenic Aspect of Venereal Diseases. J. Ernest Lane, F.R.C.S.

57 Observations upon the Law Relating to the Pollution of Rivers by Sewage. A. C. Farquharson, B. Sc., M. D., D. P. H. Camb.

58 On the Working of the Food Regulations. W. Hanna, M. A., M. B., D. P. H.

59 The Necessity for a Quinquennial Census Enumeration. E. W. Hope, M. D., D. Sc., etc.

60 The Necessity for the Standardization and State Control of Veterinary Sera, and Bacterial Diagnostic and Therapeutic Agents. Prof. G. H. Wooldridge, F. R. C. V. S., M. R. I. A.

55. **Researches on Infantile Paralysis.**—*The Virus of Poliomyelitis.* The writer states that while investigations have elucidated considerable information regarding the pathology and the method of transmission, the specific organism remains unknown. Flexner, Lewis and Levaditi have demonstrated a growth in a medium of broth, monkey serum, or ascitis fluid inoculated with the virus. Staining of the sediment by the method of Loeffler as modified by Borrel, showed round or oval corpuscles and Roemer found similar organisms in emulsions of the spinal cord. Landsteiner and Levaditi first demonstrated that the organism would pass through porcelain or infusorial bougies, which were tested for comparative permeability by the addition of the bacillus prodigiouss. The filtrate produced the disease but was otherwise sterile.

That its virulency was not due to the accumulated toxins, but to the virus itself was shown by the spinal cord of the inoculated animals being virulent for others.

It is argued that the filter retains a portion of the specific organisms as the incubation period of cases following infection with the filtrate is lengthened. The organism is resistant to desiccation, heat or cold to a marked degree, which latter explains the prolongation of an epidemic into the winter season.

Ways of Penetration of the Virus.—Experiments show that this may occur by subcutaneous intra-peritoneal, intra-venous, or lymphatic inoculation, but intra-cerebral injection is the most certain. Infection has been produced by the way of the respiratory and alimentary tracts, but not by the application of the virus to the abraded skin.

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Manner of Propagation of the Virus in the Organism and its Presence in the Tissues.—Its spread from a focus of infection may be by the blood or lymph, or along a nerve, in this particular as well as in its resistance to desiccation and its permeability resembling the virus of hydrophobia.

The virus is apparently not present in the organs or blood, but resides principally in the gray matter of the spinal cord and lymphatic ganglia of the cerebro-spinal axis. The cerebro-spinal fluid is infectious soon after the introduction of the virus into the brain, but later is sterile.

Ways of Elimination of the Virus.—Numerous experiments confirm those of Flexner showing that the nasal mucous membrane is highly infectious, commencing as early as the second day after inoculation. The salivary glands also harbor the virus.

Immunity and Vaccination.—There is evidence to show that epidemics of this disease produce a certain degree of immunity in a community. Experimentally it is shown that, as a rule, an animal recovering from the disease is immune; this being also true of the abortive forms.

Artificial immunity has been produced by the injection of attenuated virus.

The serum of recovered cases has bacteriological properties *in vitro* but has no preventative or curative properties. Conclusions from a practical standpoint show it is desirable to isolate the cases of this disease, preventing both direct and indirect contact. Rigorous antiseptsis of the nasal, oval and pharangeal mucous membranes should be instituted, hydrogen peroxide being the most efficacious application. Serum treatment will be of use only in retrospective diagnosis of the disease and the discovery of abortive forms.

A. W. DUNBAR.

Public Health.

March, 1911.

61 The Relation of the Medical Officer of Health to the Voluntary Health Worker. W. F. Dearden, M. R. C. S.

62 The Relation of Public Health to Industrial Diseases, W. F. Dearden, F. R. C. S.

63 Village Water Supplies. Gerard C. Taylor, M. A. M. D.

64 Some Sociological Aspects of Infantile Mortality. John J. Buchan, M. D., D. P. H.

65 The Administrative Control of Ringworm. Joseph Cates, M. D.

66 Should Ringworm be Notifiable? J. P. Walker, M. D., D. P. H.

67 Sickness Insurance and Public Health. R. A. Lyster, M. D., D. P. H.

CHAS. F. CRAIG.

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The Indian Medical Gazette.

March, 1911.

68 Cirrhosis of the Liver. Lieut.-Col J. T. Calvert, M. B., M. R. C. P., I. M. S.

69 Explanatory Laparotomy in Affections of the Gall-Bladder and Bile-Ducts. Capt. F. A. Barker, M. B., I. M. S.

70 Ulcerated and Swollen Gums in the Native Army. Lieut.-Col. P. Hehir, I. M. S.

71 An Aid to the Diagnosis of Poisonous Snakes Capt. V. B. Green-Armytage, M. B., I. M. S.

72 Modern Midwifery Practice in India. Maj. G. T. Birdwood, M. D., I. M. S.

73 *The Sanitary Services in War.

73. **The Sanitary Services in War.**—The following important army order is published in India Army Orders, dated 12th December, 1910, on the organization of the sanitary services in war as a supplement to the medical aid provided:—

The sanitary service of the army in war will be provided for by the following organizations:—

(a) Regimental sanitary detachments with each field unit.

(b) Sanitary sections, for service at the base and on lines of communications.

2. Regimental sanitary detachments of units are already organized for peace duties—India Army order No. 354 of 1907,—and for war their personnel will remain unchanged, viz:—

	Non-commissioned Officers.	Privates.
Regiment of Cavalry.....	1	1 per squadron
Battalion of Infantry.....	1	1 per company
Other units.....	1	1 per unit

Each detachment will be under the orders of the Medical Officer in charge of the unit or of the medical subordinate in units without a medical officer. Its duties in war will be:—

(a) Supervision of water-supplies, including their protection, purification and distribution. Apparatus and chemicals required for these purposes will be in charge of each detachment.

(b) Supervision of food supplies, cooking and slaughter places of their units and disposal of waste water and refuse.

(c) Disinfection.

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(d) Supervision of the ablution places of their units and disposal of waste water.

(e) Conservancy, refuse disposal, and cleanliness of their camps, including that of animals' lines.

(f) Acting as sanitary police.

During an action the regimental sanitary detachment will assist the stretcher bearers of the unit in the removal of the wounded and dead.

3. Sanitary sections (3 to 5 to a division) have no permanent organization in peace. In war the personnel and organization of a sanitary section will be as follows:—

	Non-commissioned Officers.	Privates	Native Establishment.		
			Sweepers.	Bildars.	Bhisties.
British	2	8			
Indian.....	2	12	60	10	5
Total.....	4	20	60	10	5

Each section will be divisible into squads as may be required. It will be commanded by a medical officer, but in certain circumstances, such as employment at the base of operations, two or more sections may be commanded by one medical officer.

* * * * * *

6. The duties of sanitary sections in war are as follows:—

(a) Supervision of water-supplies, including their protection, purification and distribution. Apparatus and chemicals required for these purposes will be in charge of each section.

(b) Supervision of food supplies, cooking and slaughter places, and disposal of waste water and refuse.

(c) Disinfection.

(d) Supervision of ablution places and disposal of waste water.

(e) Conservancy, refuse disposal and camp cleanliness, including that of animals' lines

(f) Sanitation of camps of hired transport, camp bazaars, railway stations, camps and sites for troops passing through.

(g) Sanitation of routes between camps or posts, and the disposal of carcasses, etc.

(h) Carrying out sanitary schemes which are beyond the power of regimental sanitary detachments.

(i) Acting as sanitary police. ALBERT G. LOVE.

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ITALY.

Annali di Medicina Navale e Coloniale.

January, 1911.

74 Bilateral Paralysis of the Circumflex Nerve from (respectively) a Mechanical and a Traumatic Cause. G. Bisio.
75 The Operation of Angelucci for the Cure of Inflammatory and Senile Ectropion of the Lower Lid. Monterisi.
76 *Epidemic of Probable Infection by Gärtners Bacillus.
77 Contusion of the Brain without Apparent Fracture of the Skull, Following a Fall upon the Head. E. Fossataro.
78 Clinical Cases in Psychiatry (3). E. Madia.
79 Riccardo Bassi. Obituary.
80 Luciano Salinas. Obituary.

76. **Infection by Gärtners Bacillus.**—The R. N. "Bronte" left Buenos-Aires on June 15th last with all on board in the best condition of health. Eleven days later four sailors were taken sick with an acute fever, and on the next three days nine, four, and thirteen sickened, making thirty cases in all. The epidemic which ceased as suddenly as it had arisen left untouched the officers and the petty officers on board. The symptoms were high fever, pain in back and limbs, enlarged spleen, tenderness over abdomen, heavily coated tongue, vomiting, and diarrhoea in most cases. The symptoms increased in severity for four or five days and then began to subside. The duration of the disease to total convalescence was about two weeks. Trapani excludes dengue, influenza, and mild yellow fever, and although unable to positively prove his point, attributes the epidemic to the issue of a certain lot of preserved meat on the morning of the day on which the first case appeared. The meat was good in taste and appearance and had been put up in 1901 as shown by the dates on the tins. The patients had all partaken of the meat which, however, was not used by the officers or petty officers. The author concludes that the infective agent was "bacillus enteritidis, Gärtner."

W. D. McCaw.

Giornale di Medicina Militare.

February, 1911.

81 *On the Estival or "Three Days" Fever Prevailing at Bologna F. De Napoli.
82 Prophylaxis of Delinquency in the Army. A. Bucciante.
83 The Doctrine of Germ Carriers and the Prophylaxis of Infectious Diseases in Military Life. F. Testi.

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81. **Three Days' Fever.**—The author describes an epidemic of a disease which prevails in the summer at Bologna and other Italian places and causes much sickness and loss of time in the military service. He identifies the disease as the "pappataci fever" existing in Austria-Hungary and elsewhere, which has been described under several local names. The disease is specifically caused by a (probably) ultramicroscopic germ transmitted by the bite of the "phlebotamus papatisi-tisü, a small dipterous fly, of limited powers of flight, which lives around standing water and decaying vegetable matter. The sickness is never fatal but leaves a marked debility, both physical and mental. Houses or dormitories which afford ready entrance and suitable conditions for the harboring of flies are veritable nests of infection, and to pass a single night in such places generally means an attack of the fever. In the regimental epidemic described by the author 79 cases occured in twenty days and it is very significant to note that a company sleeping on the first floor in a shady exposure and with the window overlooking a garden, showed an incidence of 37.75% of sickness from this disease. Another company on the ground floor with a higher window had a sick report of 17.50%, while a company on the upper story showed only 3.75%. W. D. McCaw.

RUSSIA.

Medisinskija Pribawlenija k Morskomy Sborniko.

January, 1911.

84 Experiments in the Feeding of the Sailors of the Archangel Fleet, Half-equipage, with Fish. Junior Surgeon S. Dementjew.

85 Note on Naval Hospitals in Portsmouth and Gibraltar. Junior Surgeon Tetjew.

86 *Modern Methods of Diagnosis, Prophylaxis and Treatment of Syphilis. A. A. Shishlo.

86. **Modern Methods of Diagnosis, Prophylaxis and Treatment of Syphilis.**—Shishlo reviews all modern methods of diagnosis of lues with special reference to the Wassermann test. As regards the prophylaxis of lues he reviews merely the work done by Metschinkow and his pupil, Maisonueuve, which has become classic. The labors of Neisser and Liebert with different solutions, such as 5% silver nitrate solution, 2% sublamine, 10% quinine-glycerine solution—isoform-glycerine (50%), etc., are recited.

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The final formula adopted by Neisser is: Sublimate 0.3, Na, Cl 1.0, Tragacanth 2.0, Amyl 4.0, Gelatine 0.7, Alcohol 25.0, Glycerine 17.0, and water to make 100.

Any and all prophylactic measures are useless in such rare cases in which the luetic poison enters the blood directly. The author does not maintain that prevention can be realized from all ordinary cases, though the large majority, if directions be followed, will escape infection.

"606" comes in for a good deal of consideration. The author is very conservative, considering the fact that tertiary forms, especially those of the central nervous system appear often years after an apparent cure, at least ten years will have to elapse before a definite opinion on the value or otherwise of salvarsan as a curative agent could be acquired. Over mercury it has, to his mind, only the advantage of saving time.

In the administration of mercury, the author, to avoid pain, utilizes the plan worked out by Desmoulière, Lafay and Aurelio de Bella by dissolving the mercury (biniodide) in 10% sterilized sugar solution.

In a rather detailed citation of the bibliography the abstractor is sorry to find that no references to American literature have been made except to the article of N. V. Fox in the Medical Record (1909). G. M. BLECH.

Wojenno Medizinskij Journal, St. Petersburg.

January, 1911.

87 *The Therapeutic Application of Tesla and High Frequency Currents. S. Th. Kotovich.

88 *"Nervous Fever" in the Garrison of the City Orenburg in 1807. P. S. Tsujpljaew.

89 *Injury of the Tuberositeas of the Tibia and so-called "Schlatter's Disease." E. U. Osten-Sacken.

90 *Simplified Appliance for the Exact Localization of Foreign Bodies by the Roentgen-rays. J. S. Stepanow.

91 Contribution to the Problem of Mud Therapy in Diseases of the Nervous System. A. D. Affanassjew.

92 Contribution to the Problem of the Formation of Alkaloids in Flour and Other Foodstuffs Under the Influences of Molding Fungi. D. A. Gromakowski.

93 Financial Journal (Book) of Regimental Infirmaries of the 31st Infantry Division. S. S. Awssitidiski.

94 *The Cure of Favus (of the Scalp) in Recruits. A. A. Pewnitzki.

95 *Contribution to the Question of the Treatment of Syphilis after Prochorow.

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87. **The Therepeutic Application of Tesla and High Frequency Currents.**—This is the first part of a long serial, being reprints of lectures delivered by the author at the Moscow University, at which he is a privat-docent.

88. **"Nervous Fever" in the Garrison of the City Orenburg in 1807.**—The author found an old manuscript from the pen of Dr. Athanasius Pjatnitzki, a sort of diary which was to form part of an official report to his superiors. The document is of historic interest, and it is evident that the physician in the beginning of the 19th century knew very little of typhoid fever (Typhus), though he used the word "Tiphus" in the text. The description of the symptoms shows an exactness, which is enviable. The treatment shows a leaning towards hydrotherapy, nervines (Valerian) and for "the shattered nerves" quinine.

89. **Injury of the Tuberosits of the Tibia and So-called "Schlatter's Disease."**—Osten-Sacken, whose name has a fine ring in Russian and German literature, contributes a lengthy, highly interesting and scientific article, which, like all questions of traumatic injury, must be of interest to every progressive army surgeon. The contribution merits free translation. At this time a few remarks will have to suffice. Schlatter—he of total gastrectomy fame—described in 1903 a peculiar disease of the knees in adolescence. Since then many authors have contributed on this subject but the pathogenesis of this disease is as yet obscure. It is a great question whether the rather chronic disease of youth should rightly be known as Schlatter's for an American, R. B. Osgood, has at the very same time described the identical affection. Those interested are referred to his article: "Lesions of the Tibial Tubercle Occurring During Adolescence" which appeared in 1903 in the Boston Medical and Surgical Journal (No. 5). Two years later Winslow wrote on "Symmetrical Inflammation of the Epiphyseal Beak of the Tibia" in the "Annals of Surgery" 9, 1905, Vol. 41, p. 278. Osten-Sacken differs from Winslow in that he has demonstrated by the Roentgen-rays pronounced changes limited to the tuberosity of the Tibia. The author develops a definite pathogenesis on several clinical observations, too lengthy to be abstracted.

90. **Simplified Appliance for the Exact Localization of Foreign Bodies by the Roentgen-rays.**—The author's plan is a great simplification over any and all appliances so far offered for

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the localization of foreign bodies, a feature of special interest to Roentgenographers in the field. The author has modified the well-known "formulae" for the estimation of "distance," proposed by Boniface. The abstracter hopes to be able to test the author's idea in practice, after which, if found satisfactory, the method will be reported in full to the "Military Surgeon."

94. **The Cure of Favus (of the Scalp) in Recruits.**—Favus of the hairy scalp is a frequent disease in Poland among the lower classes. The recruits have refused epilation and the prognosis, as far as a cure is concerned, was unfavorable. At best treatment was long drawn out and unsatisfactory. Austria even refused to accept young men with favus into the ranks of the army. The author spent some time in Paris and then became enthusiastic over Roentgenotherapy for this loathsome affection (an affection which in popular Russian is an epithet synonymous with "Filthy," "dirty"). Pewnitzki says: "When I left Russia it took a year or more to cure favus—in Paris it takes a few hours, and the wards that used to be filled with children, for whom a special school had to be maintained, are now practically empty." The Austrian authorities, in view of the brilliant results by Roentgenotherapy, have amended the law and recruits with favus are accepted and sent to a dermatologic clinic in Vienna. The abstracter looked up the subject in the Reference Handbook of the Medical Sciences (1904) and finds X-ray therapy briefly alluded to as promising of success. As a curiosum he may add that over twenty years ago, when a student, the abstractor met a country physician in Polish Germany, who used to order the "head soaked in cod-liver oil, then the crusts to be removed with a fine comb" and afterwards the raw surfaces were treated with 5% carbolic salve. The "plica Polonica" he used to order cut off, but the mothers refused this on the ground that the removal of the "pigtail" would "mean" sure death.

95. **Contribution to the Question of the Treatment of Syphilis after Prochorow.**—This is really a polemic article directed against a writer of an article that appeared some time ago defending Dr. Prochow's method (large doses of mercury administered hypodermatically) which has been successfully in vogue for the past 15 years.

Trochow's method has been adopted to a great extent in France and South America, especially Brazil. G. M. BLECH.

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SPAIN.

Revista de Sanidad Militar.

March 1, 1911.

96 A Case of Cerebral Uraemia with Following Dementia. J. V. Lambea.
97 Interesting Notes on Tuberculosis. C. Lopez Brea.
98 Multilocular Cyst of the Ovary. C. Sebastian.

W. D. McCaw.

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Reviews.

PRACTICAL HYGIENE. Hygiene and Public Health. By Louis C. Parkes, M. D., D. P. H. Univ. of Lond.; Consulting Sanitary Adviser to H. M. Office of Works; Civilian Sanitary Member of the Advisory Board for Army Medical Services; Medical Officer of Health of the Metropolitan Borough of Chelsea, etc., and Henry R. Kenwood, M. B., F. R. S. Edin, D. P. H. Lond.; Chadwick Professor of Hygiene in the University of London; Medical Officer of Health and Public Analyst of the Metropolitan Borough of Stoke Newington, etc. Octavo of 691 pages. Fourth edition, with illustrations. Price $3.50 net. P. Blakiston's Son & Co., 1012 Walnut Street, Phi'adelphia, Pa., 1911.

This is an excellent book. The chapter headings are as follows: Water, The Collection, Removal, and Disposal of Excretal and other Refuse; Air and Ventilation; Warming and Lighting. Soils and Building Sites; Climate and Meteorology; Exercise and Clothing; Food, Beverages, and Condiments; the Contagia – Communicable Diseases and Their Prevention—Hospitals; School Hygiene; Disinfection; Statistics; and Sanitary Law and Administration.

The discussion of all these various subjects is brief, practical and to the point. It will be noted that military and naval hygiene is omitted. This plan is to be commended as these specialties can hardly be adequately treated within the limits of a book on hygiene designated for general use. The military and naval surgeon must, of course, study general hygiene, but no good purpose is served by sketchy treatment of service hygiene in treatises of this character. The book is written for British readers, but this does not impair the value of the greater part of of it for us.

PRACTICAL ANATOMY. Text-book of Surgical Anatomy. Second Edition Revised. By William Francis Campbell, M. D., Professor of Anatomy at the Long Island College Hospital. Octavo of 675 pages, with 319 original illustrations. Cloth, $5.00 net; Half Morocco, $6.50 net. W. B. Saunders Company, 1911, Philadelphia and London.

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One of the great advantages in medical teaching of recent years has been in respect to the subject of anatomy. Not so long ago, and in some schools even yet, there was no sense of proportion displayed in regard to instruction in this subject. The student was given a descriptive anatomy and had to learn it all irrespective of the importance of the various subjects, or he would fail to qualify on examination. Moreover, there was no attempt to make anatomy interesting by giving it practical application from the surgical standpoint.

The present work represents a successful attempt to present only anatomic data which have a practical bearing and to emphasize those structures and regions which have a peculiar interest to the surgeon. All such regions and structures are discussed separately and in detail. The book is well and clearly written and tne numerous illustrations are exceptionally good.

THE ANATOMIC HISTOLOGICAL PROCESSES OF BRIGHT'S DISEASE. By Horst Oertel, M. D., Director of the Russell Sage Institute of Pathology, New York. Octavo of 227 pages, with 44 illustrations and 6 lithographic plates. Cloth, $5.00 net. W. B. Saunders Company, 1911. Philadelphia and London.

This book is made up of lectures delivered in the Russell Sage Institute of Pathology, City Hospital, New York, during the winter of 1908 and 1909. The author states in the preface that he has endeavored to particularly emphasize relations and to reconstruct the whole as a unit of interwoven processes rather than a mere statement of facts. He believes, with much reason, that this is the proper method of teaching and that under the present system pursued in our medical schools the student learns too much by rote and fails to develop power of objective observation and a scientific method of thinking.

The lectures are on the following subjects: Historical Introduction and Classification; The Structure of the Normal Kidney and the Different Views on Its Functions in Their Relation to the Pathological Variations; The Degenerative and Exudative Features of Nephritis; The Results and Terminations of Degenerative and Exudative Nephritis; and Productive Nephritis.

Notes and references follow, then an appendix which comprises a classification of nephritis and non-inflammatory lesions of the kidney, occasionally, but wrongly, grouped as nephritis. At the end are found an index of names and an index of subjects.

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The statement is made that the generosity of the Trustees of the Russell Sage Institute made the publication possible and it is evident from the fine book-making and the beautiful illustrations that expense has not been spared.

DISEASES OF THE NOSE, THROAT AND EAR, MEDICAL AND SURGICAL. By William Lincoln Ballenger, M. D., Professor of Laryngology, Rhinology and Otology in the College of Physicians and Surgeons, Chicago. New (3d) Edition, thoroughly revised. Octavo, 983 pages, with 506 engravings, mostly original, and 22 plates. Cloth, $5.50 net. Lea & Febiger, Philadelphia and New York, 1911.

Doubtless many of our readers are already familiar with this work which has appeared in two previous editions within a brief period of time. The favorable reception which has been accorded the earlier editions will without question be repeated in this instance.

The work is encyclopedic in scope; in fact the intention of the author has been to make it serve both as a text-book and as an atlas.

The present edition has been subjected to close revision and advances in the subjects of which it treats have been incorporatd.

ENLARGEMENT OF THE PROSTATE. Its Treatment and Radical Cure. By C. Mansell Moullin, M. D. Oxon., F. R. C. S.; Vice-President of the Royal College of Surgeons; Consulting Surgeon to the London Hospital; Late Examiner in Surgery at the University of Oxford and Cambridge, etc. Fourth edition. Octavo of 176 pages. Price $1.75 net. P. Blakiston's Son & Co., Philadelphia, Pa., 1911.

This comparatively small work is made up of the following chapters:

Chapter I. The Normal Structure and Function of the Prostate; Chapter II. The Enlarged Prostate; Chapter III. The Causes of Prostatic Enlargement; Chapter IV. The Effects of Enlargement of the Prostate; Chapter V. The Symptoms of Prostatic Enlargement; Chapter VI. The Method of Examination; Chapter VIII. The General Treatment of Enlargement of the Prostate; Chapter IX. The Local Treatment of Enlargement of the Prostate; Chapter X. The Complications of Enlargement of the Prostate; Chapter XI. The Radical Treatment of Enlargement of the Prostate; Chapter XII. The Choice of Treatment.

The book is brief and to the point though it covers the subject

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Editorial.

A recent announcement of the American Red Cross should be of great interest to members of the Association of Military Surgeons. This had to do with the Marie Feodorovna Prizes for 1912.

Some ten years ago the Dowager Empress of Russia created a fund of 100,000 rubles, the interest of which is devoted to prizes for inventions to diminish the sufferings of sick and wounded in war. The administration of this fund is vested in the Russian Red Cross, and prizes are awarded every five years on the occasions of International Red Cross Conferences, when the articles submitted in competition are exhibited. The awards are made by an International Jury, which is specially appointed in each instance.

At the London Conference in 1907, the first competition was held. 18,000 rubles was available for prizes. This was divided into three equal parts constituting three prizes and in awarding these each was halved, as in the opinion of the jury in each class two inventions submitted possessed equal merit. The prize for wagons for wounded went to General C. O. Melan, Russia, who submitted a Finnish two-wheel ambulance cart, and to Colonel H. Hathaway, Great Britain, for a Tonga ambulance with tents for a dressing station. The prize for litters and their arrangements for transport was divided between Dr. Auffret, France, and Mr. Linxveiler, Germany. The former presented his litter for the transfer of wounded on board ship, and the latter different system for suspension of litters on freight cars and wagons. Messrs. Christoph and Unmack, Germany, and Dr. Boland, Holland, split the third 6,000-ruble prize. This was for the construction and arrangement of barracks or tents and dressing stations. The former submitted a "Doecker" hut and the latter a dressing station on bicycles.

About 18,000 rubles, or $9,000.00, will again be available for prizes in May, 1912, at the Washington International Conference. Different arrangements have been made both in respect to the division of the prizes and to the subjects for competition.

The prizes in 1912 will be as follows:

1 of 6,000 rubles.
2 of 3,000 rubles each.
6 of 1,000 rubles each.

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The subjects for the competition are:

(1) Organization of evacuation methods for wounded on the battle field, involving as much economy as possible in bearers.

(2) Surgeons' portable lavatories for war.

(3) Methods of applying dressings at aid stations and in ambulances.

(4) Wheeled stretchers.

(5) Support for a stretcher on the back of a mule.

(6) Easily portable folding stretcher.

(7) Transport of wounded between men-of-war and hospital-vessels, and the coast.

(8) The best method of heating railroad cars by a system independent of steam from the locomotive.

(9) The best model of a portable Roentgen-ray apparatus, permitting utilization of X-rays on the battle field and at the first aid stations.

It rests with the jury of award how the prizes will be allotted in respect to the various subjects. That is to say, the largest prize will be awarded for the best solution of any question, irrespective of what the question may be.

Further information may be obtained by addressing the Chairman, Exhibit Committee, American Red Cross, Washington, D. C.

It is believed that no American competed for the 1907 prizes at London—at least no American name appears either in the list of prize winners or of those who received honorable mention on that occasion. This was, of course, due in large measure to the fact that the subject was not brought prominently to public attention in this country. The contrary will be the case this year, for the American Red Cross has already started an active publicity campaign, and it is safe to say that there will be no dearth of inventions presented to the Central Committee. Inventions are, however, judged on their practical merits and within this association is comprised technical knowledge and practical experience which give our membership every advantage so far as America is concerned in competing for these prizes. It is hoped that many of our members by participating in this competition will assist in promoting the purpose of the illustrious donor of the Marie Feodorovna Fund, and it is not too much to expect if this be the case that they will have the honor of bearing off some of the prizes.

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News of the Services.

Articles by members appearing elsewhere have been noted during the month as follows: Entamoeba Tetragena as a Cause of Dysentery in the Philippine Islands, by Captain Charles F. Craig, Medical Corps, U. S. Army; Supernumerary Kidney Subject of Cystadenoma, by First Lieutenant Farrar Cobb, Medical Reserve Corps, U. S. Army; Smallpox and Vaccination in the Philippine Islands, by Passed Assistant Surgeon Victor G. Heiser, U. S. Public Health and Marine-Hospital Service, and The Typhoid Bacillus Carrier: A Review, by Assistant Surgeon R. M. Grimm, U. S. Public Health and Marine-Hospital Service.

Senator Owen has introduced in the 62nd Congress a bill to establish a Department of Health. This was referred to the Committee on Public Health and National Quarantine.

By being appointed today as a member of the board of managers of the Soldiers' Home in Kearny, Dr. Henry Allers, of Harrison, has had two military honors conferred upon him within six days. Last Friday he was promoted from the position of chief surgeon of the First Brigade to chief surgeon of the National Guard of New Jersey, with the rank of lieutenant-colonel. He took the place of Lieutenant William J. Parker, who resigned.

Colonel Allers' appointment as a member of the board of managers of the home was made by the Supreme Court. Another appointment to the position made by the court is that of Representative Richard Wayne Parker, of this city. Colonel Allers and Representative Parker take the places of Colonel Edward H. Wright and Marcus L. Ward, who resigned. The order making the appointment was entered upon the minutes of the court by direction of Chief Justice Gummere. Colonel Wright, who is succeeded by Representative Parker, was president of the board.

The military career of Colonel Allers commenced July 25, 1888, when he received a commission of first lieutenant, after his appointment as assistant surgeon of the First Regiment. He was made medical officer, ranking as first lieutenant, March 23, 1892. A year later he was appointed battalion assistant surgeon, with the rank of captain. He became regimental surgeon and was commissioned major April 7, 1898. He was promoted to brigade surgeon last June. Dr. Allers was major and surgeon of the First Regiment, Volunteer Infantry, during the Spanish-American War, serving from April 27, 1898, to November 4, 1898.

Dr. Allers is deputy county physician of Hudson County.—*Newark Evening News, March 2*, 1911.

Dr. Andrew J. Gilmour of 133 East Fifty-seventh Street, Manhattan, who is well known professionally and socially both in New York and

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Brooklyn, and for the past five years has held the position of captain and assistant surgeon of the Thirteenth Regiment, Coast Artillery, N. G. N. Y., has, because of lack of time, resigned his commission that he may more closely devote himself to his specialty, dermatology. Dr. Gilmour was born at Fulton, N. Y. His father was the Rev. James Gilmour, for many years the principal of Falley Seminary located at Fulton, and at that time one of the most noted private schools in the state. The ill health and final death of his father necessitated the closing of the school and thereafter he receivd his primary education at the Fulton High School. For the year 1886 he went to Europe and for the school year was a pupil at Margate College, in Kent, England. Upon his return to this country in 1887, he entered Phillips Academy at Andover, Mass., where he was graduated in 1892, entering Yale the same year. He was graduated in 1895 and commenced his studies at the College of Physicians and Surgeons of Columbia University, where he took his degree in 1899. During the summer and fall following his graduation he substituted on the House Staff of the New York Hospital and of the Methodist Episcopal Hospital in Brooklyn and in January, 1900, he began the regular course of work as interne on the staff of St. John's Hospital of Brooklyn. Dr. Gilmour has also spent considerable time studying abroad. The military record of Captain Gilmour begins with his enlistment as a private in the hospital corps of the Thirteenth Regiment in 1901. He was soon promoted to the position of assistant hospital steward with the grade of sergeant with rank from June 20, 1901, and served in this capacity until his departure for Europe in 1902, when he was dropped from the rolls of the command by reason of change of residence. He was taken up from dropped upon his return in June, 1903, and served in the same position of assistant hospital steward until his promotion to assistant surgeon June 14, 1906. He has performed one hundred per cent duty since his membership in the command. Dr. Gilmour has always taken an active interest in athletics. He is also a capital rifle shot and in 1906 was a member of the regimental rifle team in the state match. The same year he won the third prize in the Officers' Revolver Match at the armory. He is a member of the Academy of Medicine, of the Medical Society of the State of New York, of the County Medical Society, Society of the Alumni of the Sloane Maternity Hospital, of which he has held the position of secretary and vice-president of the Alumni of St. John's Hospital. Among his clubs are the Yale Club of New York, the Graduate Club of the Theta Delta Chi Fraternity, the Sons of the Revolution and Association of Military Surgeons.—*Brooklyn Life.*

1st Lieut. Eben C. Hill, Medical Corps, is on temporary duty at Fort Monroe, Virginia. His permanent station is Madison Barracks, N. Y.

At the March preliminary examination for appointment in the Medical Corps, the following six candidates were successful:

Ingold, John George, Chicago, Illinois.
McEnery, Douglas Wiltz, New Orleans, La.
Ruddy, William Patrick, Philadelphia, Pa.
Sherwood, John Wesley, Fort Williams, Me.

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Turnbull, Samuel Jay, Monticello, Fla.

Upshur, Alfred Parker, Richmond, Va.

Doctor John W. Sherwood is at present a member of the Medical Reserve Corps, and is on duty at Fort Williams, Maine. The other successful candidates have been commissioned in the Medical Reserve Corps. Lieutenants McEnery, Turnbull and Upshur have been assigned to duty with the Maneuver Division, San Antonio, Texas. Lieutenant Ruddy will be called into active service about May 1st.

1st Lieut. Julius C. LeHardy, Medical Reserve Corps, arrived in San Francisco on the transport Sheridan on April 11, 1911; after accompanying the 13th Cavalry to Fort Riley, Kansas, he will join his station at Fort Ward, Washington.

Major George H. R. Gosman, Medical Corps, has been sent to Tokyo, Japan, where he will study the Japanese language for a period of two years.

1st Lieut. William H. Allen, Medical Corps, Fort Slocum, New York Harbor, is under observation and treatment at the Walter Reed General Hospital, Takoma Park, D. C.

Major Philip G. Wales, Medical Corps, has been relieved from duty with the troops in the field in the vicinity of San Diego, California, and returned to his station, Presidio of Monterey.

Colonel Blair D. Taylor, Medical Corps, will retire from active service on April 30th. His retirement promotes Lieut. Col. George E. Bushnell to Colonel; Major M. W. Ireland, to Lieutenant Colonel, and Captain Wilson T. Davidson to Major.

The friends of Lieut. Colonel Frank R. Keefer, Medical Corps, will be pleased to know that his health was very much improved by his stay at Hot Springs, Arkansas.

The Maneuver Division at San Antonio, Texas, has now been in camp for considerable more than a month. Every man in the command has received three injections of anti-typhoid serum. There has not been a single case of typhoid fever in the command. The sanitary conditions of camp are excellent. The method of disposing of waste is working satisfactorily in every respect. The sickness is at a minimum. No cases of preventable diseases have so far occurred in the command.

Owing to the immense amount of work that was thrown on the Medical Supply Depot, St. Louis, Missouri, by reason of the mobilization of troops, 1st Lieutenant James R. Mount, Medical Corps, was assigned as assistant to the supply officer in that city.

It was found necessary on account of the establishment of the maneuver Division to abandon the Field School for Medical Officers at Fort Leavenworth, Kansas, for this year.

Captain James D. Fife, Medical Corps, has reported for duty at Fort Slocum, New York harbor.

By recent orders, Fort Preble, Maine, and Fort Revere, Massachusetts, have been abandoned. 1st Lieutenant Joseph W. Love, Medical Reserve Corps, who was on duty at Fort Preble, Me., has been sent to Fort Banks, Mass., for duty, and 1st Lieutenant Ralph W. Newton, Medical Reserve

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Corps, who was on duty at Fort Revere, Mass., has been sent to Fort Andrews, Mass., for duty.

1st Lieutenant George C. Craig, Medical Reserve Corps, who has been attending surgeon at Rock Island Arsenal, Rock Island, Ill., for a great many years, died on March 12, 1911. Doctor Craig was a veteran of the Civil War, and was held in high esteem by all the commanding officers at Rock Island Arsenal under whom he has served. Dr. George L. Eyster, of Rock Island, has been appointed attending surgeon at the Arsenal in Dr. Craig's place.

All the Contract Dental Surgeons in the Army at present will be appointed 1st Lieutenants in the Dental Corps as soon as the reports of their physical examination are received at the War Department.

1st Lieutenant Ira C. Brown, Medical Reserve Corps, is on temporary duty at Fort Douglas, Utah.

The resignation of 1st Lieutenant H. N. Bundesen, Medical Reserve Corps, was accepted to take effect on March 30th.

Major Louis Brechemin, Jr., Medical Corps, has reported for duty at Fort Lincoln, North Dakota.

Captain Wilson T. Davidson, Medical Corps, has reported for duty at his new station, Fort McIntosh, Texas.

Captain James Bourke, Medical Corps, has reported for duty at his new station, Fort Crockett, Texas.

Captain William H. Moncrief, Medical Corps, Fort Leavenworth, Kansas; Captain Will L. Pyles, Medical Corps, Fort Mackenzie, Wyoming; 1st Lieutenant Joseph Casper, Medical Corps, Fort Du Pont, Delaware; and 1st Lieutenant John W. Sherwood, Fort Williams, Maine, have reported for duty with the First Provisional Brigade, Galveston, Texas.

Colonel H. O. Perley, Medical Corps, is inspecting the troops from the Department of Colorado, who are on duty on the border.

Major E. R. Whitmore, Medical Corps, has reported for duty at his new station, Fort Barrancas, Florida.

The following-named 1st Lieutenants of the Medical Corps, recent graduates from the Army Medical School, have been assigned to duty as follows:

To the troops in the Vicinity of San Diego, California.—Alleyne von Schrader, William T. Cade, Jr., Herbert H. Sharpe, James F. Johnston, Bert R. Huntington, Harry G. Ford, Paul W. Gibson, Francis X. Strong, Robert C. McoDnald.

To the Maneuver Division, San Antonio, Texas.—George E. Pariseau, Lauren S. Eckels, Lloyd A. Kefauver, John S. Coulter, Thomas J. Flynn, Frederick H. Foucar, Joseph L. Siner, John R. McKnight, Eugene G. Northington, Samuel S. Creighton, Robert H. Gantt, Edward C. Register, William Denton, Goerge G. Divins, Howard Clarke, Clemens W. McMillan, Sanford W. French, Joseph O. Walkup, Horace M. Roberson, Leonard S. Hughes, Charles E. McBrayer, George B. Lake, Fred R. Burnside, Albert P. Clark, Daniel F. Maguire, Raymond W. Mills, Henry C. Maddux, Jay D. Whitham, Leo C. Mudd, Josiah H. Holland, John M. Willis, John J. Reddy, James L. Robinson, Henry C. Michie, Jr., Frank N. Chilton, Henry P. Carter, Harley J. Hallett.

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General Order No. 1, A. G. O., State of Illinois, Springfield, announces the following inspection of Sanitary Troops by Major Gideon McD. Van Poole, Medical Corps, U. S. Army: Chicago, April 17—Field Hospital and Detachment with 1st Infantry. Chicago, April 18—Detachment with the 2d Infantry. Chicago, April 19—Detachment with the 1st Cavalry. Chicago, April 20—Detachment with the 7th Infantry. Chicago, April 21—Detachment with the 8th Infantry. Danville, April 24—Detachment with the Artillery Battalion. Paris, April 25—Detachment with the 4th Infantry. Hillsboro, April 26—Detachment with the 5th Infanry. Geneseo, April 27—Detachment with the 6th Infantry. Rockford, April 28—Detachment with the 3d Infantry.

The following is quoted from the Bulletin of Militia Notes:

97. (22866) The supply of Form No. 34, Requisition for Field Medical Supplies, is exhausted, and, pending the revision of the field supply table, a new edition will not be printed. Form No. 35 is a supply request form and may be used for making requisitions for field supplies

99. (20880) In connection with the organization of the Medical Department of a State having a separate brigade organization, it is suggested that there should be a major for each brigade and regiment organized, to be assigned as chief surgeon, also an additional major for duty as sanitary inspector, and a major to command a field hospital.

Provision should be made for sufficient number of captains or first lieutenants in the proportion of three to each regiment (of three battalions); also one for each separate battalion or squadron of infantry and cavalry, battery of field artillery, companies of engineer and signal corps; two to four if a field hospital is organized and three to five for each ambulance company.

It is suggested that it would be well, in the appointment of medical officers of the Organized Militia, if certain physical, professional and moral requirements were demanded, and if none were appointed until they received the approval, after examination, of a board of medical officers of the Organized Militia; that all promotions in the medical corps should be subject to examination, and that original entries should be in the grade of first lieutenant, and promotion to the rank of captain (with examination) after three years' service.

It is not regarded essential that noncommissioned officers should be limited to registered pharmacists or licensed practitioners of medicine. It is preferable that these appointees should demonstrate their fitness by examination and thus encourage the promotion of all enlisted men belonging to sanitary troops.

104. (23213) The Secretary of War is of the opinion that, where the Organized Militia of a State comprises a division of three brigades, four field hospitals and four ambulance companies should be organized, in addition to the regimental infirmaries (the equipment of which is provided under paragraph 593, Manual of the Medical Department, 1906). The equipment for a field hospital is given in paragraphs 582 to 590, inclusive, Manual of the Medical Department, 1906, and for an ambulance company in paragraph 594 of the manual referred to. Regimental infirmaries

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are all that are necessary for regiments, and if one or more field hospitals are organized, the regimental hospitals can be ignored. Further information in this connection may be obtained by reference to Circular No. 19, Division of Militia Affairs, November 9, 1910.

Dr. R. Matas, one of the distinguished surgeons in the Medical Reserve Corps, U. S. Army, and a member of the Association, requests that fellow members and others who may have had personal experience in the Operative Treatment of Aneurism by the intra-saccular method of suture, (Endeaneurismorrhaphy, also known as the "Matas Operation") notify the Secretary, or communicate their experience directly to him at 2255 St. Charles Avenue, New Orleans, Louisiana.

Major Verge E. Sweazey, Medical Corps, U. S. Army, retired, died at 10.15 o'clock, April 16th, 1911, at Pasadena, California.

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STATION LIST OF OFFICERS

OF THE

Medical Corps, U. S. Navy.

APRIL 15, 1911

Name and Rank	*Present Duty or Station*

SURGEON GENERAL.

With Rank of Rear-Admiral.

Charles Francis Stokes	Chief Bureau of Medicine and Surgery.

MEDICAL DIRECTORS.

With Rank of Captain.

Remus Charles Persons	Naval Hospital, Philadelphia (1).
Manly Hale Simons	Naval Hospital, Mare Island.
John Covert Boyd	Member Naval Retiring Board.
Howard Wells	Navy Yard, Portsmouth (2).
Daniel Nicholas Bertolette	Member Naval Medical Examining Board.
Ezra Zacharias Derr	Navy Recruiting Station, Providence.
Lucien Guy Heneberger	Naval Medical School Hospital.
Edward Harris Green	Navy Recruiting Station, New York.
Samuel Henry Dickson	Marine Barracks, Washington.
Howard Emerson Ames	Naval Training Station, San Francisco.
Frank Anderson	Member Naval Medical Examining Board.
Phillips Adams Lovering	Naval Medical Supply Depot, New York.
William Richards Du Bose	Member Naval Medical Examining Board.
Charles Thomas Hibbett	In Command, Naval Hospital, Norfolk.
Henry Gustav Beyer	In Command, Naval Medical School.

MEDICAL INSPECTORS.

With Rank of Commander.

James Edwin Gardner	Marine Recruiting Station, Boston (3).
James Carroll Byrnes	Naval Hospital, New York.
James Duncan Gatewood	President Board Examination Medical Officers.
Oliver Diehl	Naval Hospital, Newport.
John Marion Edgar	Naval Hospital, Boston.
Philip Leach	Naval Hospital, Las Animas.
Lloyd Walley Curtis	Torpedo Station.
Francis Smith Nash	Navy Recruiting Station, Philadelphia (4).
Oliver Dwight Norton	West Virginia (Fleet).
Francis Wm. Ferdinand Wieber.	Navy Recruiting Station, New York (5).
Andrew Reginald Wentworth.	Medical Officer, Navy Yard, New York.
Thomas Andrew Berryhill	Marine Recruiting Station, New York.
Eugene Potter Stone	Medical Officer, Navy Yard, Boston.
James Gaven Field	Navy Yard, Norfolk (4).
George Pickrell	In Command of Naval Hospital, Annapolis.
Albert Mont'y Dupuy McCormick.	Naval Academy.

SURGEONS.

With Rank of Lieutenant Commander.

George Brinton Wilson	Saratoga.
Edward Rhodes Stitt	Naval Hospital, Canacao, P. I.
Manley Fitch Gates	In Command of Solace.

(1) Also President Naval Medical Examining Board.
(2) Also Naval Hospital.
(3) Also duty in attendance upon officers in city.
(4) Additoinal number in grade.
(5) Also Marine Recruiting Station and attendance upon officers in city.

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Name and Rank	*Present Duty or Station*

SURGEONS—Continued.

Charles Henry Tilghman Lowndes.	Navy Recruiting Station, Baltimore (6).
George Holcomb Barber...	Asiatic Station.
Rand Percy Crandall.....	Naval Hospital, New York, Treatment.
George Tucker Smith.....	Naval Station, Hawaii.
George Augustus Lung....	Connecticut (Fleet).
Luther Lochman Von Wedekind.	Navy Recruiting Station, Chicago.
Edward Strong Bogert, jr..	Naval Hospital, Yokohama.
Leckinski Ware Spratling.	Medical Officer, Navy Yard, Washington.
Robert Morris Kennedy....	Naval Hospital, San Juan.
Norman Jerome Blackwood.	Naval Hospital, New York.
William Clarence Braisted.	Assistant to Bureau of Medicine and Surgery.
Sheldon Guthrie Evans....	Pennsylvania.
Adrian Richard Alfred....	Minnesota.
Charles Moore De Valin...	Navy Recruiting Station, Detroit.
Charles Perry Bagg.....	Colorado.
Carl De Wolf Brownell....	Naval Hospital, Las Animas.
Henry Delano Wilson.....	Navy Recruiting Station, Boston.
Lewis Morris.....	Hancock.
Edward Mansfield Shipp..	Naval Medical School Hospital.
Charles Edward Riggs....	Naval Academy.
James Farquharson Leys..	Naval Training Station, Newport.
Frank Clarendon Cook.....	Naval Hospital, Puget Sound.
Ammen Farenholt.....	Marine Recruiting Station, San Francisco.
Charles Poor Kindelberger.	Medical Officer, Navy Yard, Mare Island (8).
Arthur White Dunbar.....	Bureau of Medicine and Surgery.
Theodore Wright Richards.	Do.
Moulton Kinsinger Johnson.	Tennessee.
William Mackall Wheeler..	Kansas.
Middleton Stuart Elliott...	Naval Medical School.
Frank Lester Pleadwell....	North Dakota.
Dudley Newcomb Carpenter.	Naval Academy.
James Chambers Pryor....	Bureau of Medicine and Surgery.
Washington Berry Grove..	Naval Medical School Hospital.
Raymond Spear.....	Do. (6, 9).
Edgar Thompson.....	Medical Officer, Navy Yard, Charleston.
John Benjamin Dennis....	Medical Officer, Navy Yard, Philadelphia.
Eugene Julius Grow.....	Solace.
Cary Devall Langhorne....	Naval Hospital, Philadelphia.
Jos. Cheesman Thompson..	Special Duty under War Department.
Frederick Leslie Benton...	Idaho.
Will Melville Garton.....	Naval Hospital, Norfolk.
Frank Edw. McCullough..	Marine Expeditionary Force.
Francis Mohun Furlong...	Naval Hospital, Boston.
Ralph Thompson Orvis....	New Hampshire.
Granville Louis Angeny...	Lancaster.
William Hemphill Bell....	Panama Canal Commission.
Holton C. Curl.....	Asiatic Station.
Richmond Cranston Holcomb.	Delaware.
Edward Grahame Parker..	Naval Academy.
Barton Lisle Wright.....	Nebraska.
Henry Edward Odell.....	Naval Station, Guam.
Jas. Spottiswoode Taylor...	Mississippi.
Joseph Anthony Murphy..	Naval Academy.
John Timothy Kennedy....	Louisiana.

(6) Also duty in attendance upon navy and marine officers in city.
(7) Also duty Naval Medical School.
(8) Also Navy Medical Supply Depot.
(9) Also member board for examination of medical officers.

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Name and Rank	*Present Duty or Station*

SURGEONS—Continued.

Karl Ohnesorg.....	Waiting Orders.
Charles Norman Fiske.....	Georgia.
Ralph Walter Plummer...	Franklin.
John Jacob Snyder.....	Michigan.
Edw. Maurice Blackwell...	Solace.
George Franklin Freeman.	Duty in Attendance Officers in Washington.
Fred Macon Bogan.....	Wisconsin.
Robt. Emmet Ledbetter...	Waiting Orders.
Charles St. John Butler...	Naval Medical School (10).
Richard Bland Williams..	South Carolina.
Samuel Sayre Rodman....	Rhode Island.
John Mosley Brister.....	Naval Hospital, Annapolis.
Herbert Orlando Shiffert...	Vermont.
Allan Earle Peck.....	Asiatic Station.
Charles Gordon Smith.....	Montana.
John Hooe Iden.....	Washington.
William Seaman.....	Naval Hospital, Pensacola (11).
Royall Roller Richardson..	Virginia.
Frederick Asser Asserson..	Naval Hospital, Boston.
Henry Albert Dunn.....	Naval Medical School Hospital.
Allan Stuart.....	Navy Recruiting Station, Hartford.
Jacob Stepp.....	Wabash.
Herbert Myron Tolfree....	Navy Recruiting Station, Chattanooga.
Louis Wilson Bishop (12)..	Tacoma.
Archibald Magill Fauntle-roy.	Solace.
Ulys Robert Webb.....	Naval Hospital, Mare Island.
Charles Malden Oman.....	Naval Hospital, New York.
Robt. Alexander Bachmann.	Naval Hospital, Newport.

PASSED ASSISTANT SURGEONS.

With Rank of Lieutenant.

Howard Francis Strine....	Naval Hospital, Norfolk.
Robert Eustis Hoyt.....	Buffalo.
Joseph Paul Traynor.....	Navy Yard, Boston.
John Francis Murphy.....	Naval Hospital, Las Animas.
Jesse William Backus.....	Pennsylvania.
Morton Whitlock Baker...	Naval Hospital, New York.
James Hillyer Holloway...	Navy Yard, New York.
John Land Neilson.....	Naval Dispensary.
Ransom Edwards Riggs...	Naval Hospital, Port Royal.
Fred'k Wm. Semmes Dean.	Naval Magazine, Iona Island.
Clarence Francis Ely.....	Naval Proving Ground, Indian Head.
Francis Merton Munson...	Independence.
James Robert Dykes.....	Navy Yard, Portsmouth, N. H.
Albert Julius Geiger.....	Naval Hospital, Mare Island.
Perceval Sherer Rossiter...	Independence.
Wesley Hartman Rennie..	Boston.
Walter Scott Hoen.....	Naval Station, Guantanamo.
Wallace Bruce Smith.....	Naval Hospital, Annapolis.
Charles Courtney Grieve..	Prairie.
John Darwin Manchester..	Naval Training Station, Great Lakes.
James Savage Woodward..	Naval Hospital, Mare Island.
James Augustus Randall..	Naval Station, New Orleans.
Charles Edward Ryder....	Vermont.
Allen Donald McLean.....	Washington, D. C. (13).
Fred'k Gustavus Abeken..	Naval Training Station, St. Louis.

(10) Also member of board for examination of medical officers.
(11) Also duty navy yard, Pensacola.
(12) Subject to examination and confirmation.
(13) Also duty in attendance upon officers in city.

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Name and Rank	*Present Duty or Station*

PASSED ASSISTANT SURGEONS—Continued.

Winfield Scott Pugh, jr.	Marine Expeditionary Force.
James Edward Gill	Navy Recruiting Station, Cleveland.
Isaac Stockton Keith Reeves.	Navy Yard, Philadelphia.
Harry Shaw	Navy Yard, Washington.
Burt Franklin Jenness	Naval Hospital, Portsmouth.
Robert Graham Heiner	Naval Hospital, Annapolis.
Robert Earle Stoops	Culgoa.
Benjamin Henry Dorsey	Naval Hospital, Puget Sound.
Harry Fick Hull	Panther.
George Lewis Wickes	Saratoga.
Harry Lee Brown	Recruiting Station, Los Angeles.
William John Zalesky	Salem.
Lewis Hawley Wheeler	Virginia.
Henry Agett May	Naval Hospital, Las Animas.
William Dunlop Owens	Legation Guard, Peking.
William Arnold Angwin	California.
Owen Joseph Mink	West Virginia.
Frederick Eugene Porter	Naval Station, San Juan.
Paul Tonnel Dessez	Helena.
Norman Thomas McLean	Dolphin.
Cary Travers Grayson	Mayflower.
Wrey Gilmor Farwell	Nebraska.
David Clark Cather	Delaware.
William Neil McDonell	Massachusetts (14).
Harold Wellington Smith	Connecticut.
Addison Bertram Clifford	Albany.
Eugene Augustus Vickery	Maryland.
Judson Ludwell Taylor	Chester.
Francis Marion Shook	Naval Hospital, New York.
Richard Ambrose Warner	New York Nautical Training Ship Newport.
Paul Randolph Stalnaker	Naval Station, Culebra.
Ernest Oliver Jos. Eytinge	South Dakota.
Curtis Boyd Munger	Yorktown.
Fletcher Hastings Brooks	Birmingham.
John Bowdoin Mears	Asiatic Station.
Geo. Stimpson Hathaway	Naval Station, Olongapo, P. I.
Frank Este Sellers	Naval Station, Guam.
Edw. Henry Herbert Old	North Carolina.
Edw. Clendenning White	Buffalo.
Thurlow Weed Reed	Wolverine.
Edward Urbane Reed	Princeton.
Clarence Edward Strite	Vermont.
Howson White Cole, jr	Yankton.
Edgar Lyons Woods	Naval Hospital, Annapolis.
Robt. Cathcart Ransdell	Baltimore.
Edwin Lee Jones	Navy Recruiting Station, Dallas.
Thomas Gardner Foster	Asiatic Station.
Condie Knox Winn	Naval Station, Key West.
John Brooks Kaufman	Navy Yard, Norfolk.
Matthew Howard Ames	Asiatic Station.
Ausey Hamilton Robnett	M. C. Rifle Range, Winthrop, Md.
James Plummer Haynes	Naval Station, Olongapo, P. I.
Abraham Herbert Allen	Washington.
André Edward Lee	Navy Recruiting Station, Buffalo.
Heber Butts	Naval Medical School.
Philip Eugene Garrison	Naval Medical School.
Thomas Wrightson Raison	Navy Recruitng Station, Indianapolis.
John Otho Downey	Marine Expeditionary Force.
James Morgan Minter	Wilmington.
Spencer Littlefield Higgins	Naval Hospital, Yokohama.

(14) Also duty on board Indiana and Iowa.

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Name and Rank	*Present Duty or Station*

PASSED ASSISTANT SURGEONS—Continued.

Renier John Straeten	Navy Recruiting Station, Omaha.
Frank Hamilton Stibbens	Naval Training Station, San Francisco.
Isidore Franklin Cohn	Castine.
Reynolds Hayden	Naval Hospital, Norfolk.
Edward Victor Valz	Naval Prison, Portsmouth.
Mont'y Alexander Stuart	Panama Canal Commission.
Rudolph Ignatius Longabaugh.	Navy Recruiting Station, Cedar Rapids.
Frank Xavier Koltes	Returning frim Asiatic Station.
William Henry Short	Reserve Torpedo Divisions, Charleston.
Herbert Lester Kelley	Navy Yard, Mare Island.
Julian Taylor Miller	Franklin.
George Barnett Tribie	Naval Hospital, Norfolk.
Harry Alfred Garrison	Do.
Henry Louis Dollard	Navy Recruiting Station, Kansas City.
Earle Phineas Huff (15)	Returning from Asiatic Station.
Harry Robert Hermesch	Navy Recruiting Station, Minneapolis.
Harry Luther Smith	Ordered Hancock.
Willard Geo. Stedman, jr.	Dixie.
Martin Donelson	Naval Hospital, Newport.
Myron Clarke Baker	Naval Training Station, Newport.
Elmer Eaton Curtis	Naval Training Station, San Francisco.
Dow Holmes Casto	Philadelphia.
Charles Waite Orville Bunker.	Naval Hospital, Mare Island.
Howard Foster Lawrence	Naval Hospital, Las Animas.
Charles Joseph Holeman	Petrel.
Gordon Dyer Hale	Waiting Orders.
Alexander Bayly Hayward	Colorado.
Montgomery Earle Higgins	Naval Medical School.
Geo. Wanzer Shepard (15)	Naval Station, Culebra.
Ernest Wm. Brown (15)	Special Duty.
Dallas Gilchrist Sutton	Des Moines.
Alfred Joseph Toulon (15)	Returning from Asiatic Station.
Jas. Thomas Duhigg (15)	Navy Recruiting Station, Cincinnati.
Lawrence Maurice Schmidt (15).	Solace.
Egbert Gray Mackenzie (15).	Kansas.

ASSISTANT SURGEONS.

With Rank of Lieutenant (Junior Grade).

Charles Leo Moran	Georgia.
Charles Fague Sterne	Pacific Torpedo Fleet.
William Chambers	Maryland.
Sankey Bacon	Wheeling.
Frank Pennybacker White Hough.	New Hampshire.
Kent Churchill Melhorn	Dixie (16).
Lee Wesley McGuire	South Dakota.
Joseph Albert Biello	Naval Hospital, Mare Island.
George Carroll Rhoades	Naval Hospital, Norfolk.
Harry Hamilton Lane	Asiatic Station.
Ralph Walker McDowell	Bureau of Medicine and Surgery.
David Gordon Allen	Elcano.
Lindsay Cochrane Whiteside.	New Jersey (17).
Chandler White Smith	Dubuque.
George Carroll Thomas	Rhode Island.

(15) Subject to examination.
(16) Also duty Atlantic Torpedo Fleet.
(17) Also duty Missouri.

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Name and Rank	*Present Duty or Station*

ASSISTANT SURGEONS—Continued.

Maurice Edgar Rose	Celtic.
Micajah Boland	Naval Hospital, Philadelphia.
Joseph Royal Phelps	Solace.
George Blaine Crow	Returning from Asiatic Station.
Alfred Lee Clifton	Michigan.
Harry Williams Biddle Turner.	Naval Station, Olongapo.
Reginald Buchanan Henry	Rainbow.
Harry Albert Giltner	Glacier.
Lucius Warren Johnson	Marine Expeditionary Force.
John Beverly Pollard	Marine Expeditionary Force.
Arthur Howard Dodge	Treatment, Naval Hospital, Las Animas.
George Franklin Cottle	Naval Station, Tutuila.
William Leake Mann, Jr	Tennessee.
Roy Cuthbertson	West Virginia.
George Byron Whitmore	Connecticut.
John A. Broadus Sinclair	Naval Hospital, Sitka.
Donald Hollingsworth Noble.	Villalobos.
John George Ziegler	Marine Detachment, Isthmus of Panama.
Glenmore Ford Clark	Solace.
William Murray Kerr	Naval Station, Guam.
George Albert Riker	Louisiana.
Tharos Harlan	Quiros.
Andrew Blaine Davidson	Iris.
William Lorne Irvine	Marietta.
Earle W. Phillips	Paducah.
James Alvin Bass	Saratoga.
Duncan Cameron Walton	Saratoga.
Griffith Edwards Thomas	Asiatic Station.
Walter Andrew Bloedorn	Monterey.
Clyde Bradley Camerer	California.
Gardner Ellis Robertson	Mississippi.
Arthur Bond Cecil	Naval Station, Guantanamo.
Irving Whitmore Robbins	Vicksburg.
Harry Equilla Jenkins	Montana.
George Reuben Williamson French.	Fisheries Steamer Albatross.
Stanley Douglass Hart	Asiatic Station.
William Henry Connor	Annapolis (18).
Frank William Thompson	Montgomery.
William James Riddick	South Carolina.
Joseph John Anthony McMullin.	North Carolina.
Edward Peter Halton	Naval Station, Guam.
Arnold Leon Jacoby	Naval Medical School.
William Edward Eaton	North Dakota.
William Howard Halsey	Naval Medical School.
James Gibson Omelvena	Asiatic Station.
Jasper Victor Howard	Supply.
Lester Leslie Pratt	Asiatic Station.
John Joseph O'Malley	Asiatic Station.
Clarence Cameron Kress	Naval Medical School.
Robert Francis Sheehan	Minnesota.
Daniel Delehanty Vincent Stuart, jr.	Idaho.
Chester McIntyre George	Naval Hospital, New York
Luther Sheldon, jr	Naval Hospital, Norfolk.

(18) Also duty Naval Station, Tutuila.
(19) Also duty in attendance upon officers in city

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The Military Surgeon

Original Articles.

AUTHORS ALONE ARE RESPONSIBLE FOR THE OPINIONS EXPRESSED IN THEIR CONTRIBUTIONS.

ADDRESS OF PRESIDENT TAFT TO THE PHILADELPHIA MEDICAL CLUB, AT THE BELLEVUE-STRATFORD, PHILADELPHIA, PA., MAY 4, 1911.

Gentlemen of the Philadelphia Medical Club, and my Fellow Guests:

THE "City of Brotherly Love" is one of the most important medical centers in this country. Whether it is that the atmosphere of the Friends' Society promoted the spirit of the good Samaritan, and in that way developed a great interest in the science of medicine here or not, I can not say; but certain it is that the importance and preeminence of your medical schools reach back far into the past, and they continue to maintain a deservedly high reputation the world over. Philadelphians have explained to me that when ill and away from Philadelphia, they do not feel at all safe until they have returned again to this city of doctors, where they can either get relief and renewed vitality, or will be allowed to retire from this world, with the satisfaction that if they can not live in Philadelphia, they can at least die here under proper medical supervision. When, therefore, this Medical

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Club invited me to attend one of its meetings, I gladly accepted, because it seemed to me that if I had any message to the medical men of the United States I could not find a more favorable place to deliver it than here.

Since 1898 and the Spanish War the people of the United States have been a colonizing and colony-holding people. We have become responsible for the welfare of Cuba, Porto Rico, the Isthmus of Panama, and the Philippines. We have had under our care and guardianship the hygiene and the health of Tropical peoples; and while I should be the last one to minimize the importance and value of the benefits that we have conferred on the inhabitants of the Tropics thus coming under our Government of a political and economic and educational character, I do not hesitate to say that we have been most distinctly successful in the measures that we have adopted, maintained, and enforced for the improvement of the health and physical condition of these people in the Torrid Zone, over whom we have assumed guardianship.

It is not too much to say that the prevalence of yellow fever in Cuba and its constant recurrence as an epidemic in Havana and the other cities of that island, so near to our own shores, threatening death to our own Southern cities, was one of the chief causes, and, I may add, one of the real justifications for the popular feeling that led to the Spanish War. Hence, it was that no sooner did we take Cuba, to bring it under our control, than the most strenuous efforts were directed toward cleaning it up as a pesthole and changing its character as a neighbor dangerous to health.

The same task fell upon us in assuming possession and control of Porto Rico, in undertaking the government and improving the conditions in the Philippines, and finally in the preparation of the Canal Zone for the construction of the Canal. In the first three of these tasks of hygienic reform, the control of governmental methods devolved in the first instance upon the Army, because the early governments were all military governments. In consequence the health regeneration in these three colonies became the work of the Medical Corps of the Army, and so well was it performed that when the necessity for cleaning up the Canal Zone and making it healthful became apparent, we took a member of the Army Medical Corps and put him in charge.

It was while we were in Cuba that Walter Reed, an army doctor, investigated and verified the correctness of the theory announced some little time before, that the germ of yellow fever

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was conveyed from one human being to another by a certain species of mosquito. This discovery revolutionized the method of treating yellow fever, and it was made clear that the great effort and expenditure of money required to clean up Havana and the other infected towns, while useful in the prevention of other diseases, had little or no effect to prevent yellow fever. An entirely different course of procedure had to be followed. It was adopted in Havana and the other cities of Cuba and was most successful, and one of those officers engaged in the work was Colonel Gorgas, of the Army Medical Corps.

Then we took over Porto Rico. We found that in that island the people were not suffering so much from yellow fever, but there was what was called "Tropical anemia," and it was not long before an army doctor named Ashford discovered that this was not the result of starvation and the absence of nutritious food, but was a disease due to the presence in the intestines of the so-called "hookworm," and that it yielded to treatment, and that the many deaths and the general disability that the hookworm produced in the people of Porto Rico could be avoided in the future by comparatively simple and specific treatment. Half a million people have been the recipients of this treatment and have recovered, and a second campaign is now being planned of greater thoroughness, preparation, and practice, which will doubtless rid the island of this disease.

In the Philippines we did not encounter yellow fever, for that as yet has not reached the Pacific, but we found there, in glorious exuberance, cholera, bubonic plague, beriberi, malaria, smallpox, amoebic dysentery, and leprosy, a bill of fare for the enterprising and progressive physician and knight of investigation and research calculated to make his mouth water, and a list of scourges which the civil administrator viewed with alarm and despair. By improving the water supply and introducing mountain water into Manila, at a cost of $2,500,000, and by the introduction of artesian wells in many of the towns and villages of the interior, by regulations as to the food supply, by a new sewage system in Manila, costing $2,000,000, and by regulations securing the proper and safe disposal of sewage in the smaller towns and villages, and by the use of inoculation with cholera lymph, we have greatly reduced the number of victims from cholera in those islands. By a wholesale vaccination of all the inhabitants of the Philippines, carried on carefully and rigorously, we have practically stamped

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out smallpox of all kinds in the islands, in which the black smallpox of the most virulent type flourished before our coming. By a crusade against rats and a cleaning up and destruction of the foci of the disease, we have taken all the terrors in the Philippines out of bubonic plague. By careful attention to the destruction of the mosquito, we have greatly moderated the injurious effects from malaria, and while amoebic dysentery continues to be a most dangerous and lingering form of disease in the Philippines in many cases, if treated in time it is subject to the control and cure of the remedies discovered and adopted there.

When we went to the Philippines, lepers were at large. There were leper hospitals in Manila, in Cebu, and in some other parts of the country, but the horrible and sickening character of them beggars description. We have segregated the lepers in all provinces in the islands to the number of 4,000, and have taken them to Culion, a beautiful island in the southern seas, have given them almost a self-governing colony, and have made them so happy and comfortable that we have now no difficulty in inducing all persons afflicted with this disease to join the colony. The effect of this segregation has been to reduce the new cases annually of leprosy to 16 per cent of what they were formerly.

One of the most obstinate and difficult diseases in the Philippines, and indeed of the whole Orient, has been what is called "beriberi." For a long time the cause of it was beyond our discovery. But now it has been definitely traced to the use of polished rice as food. I need not go further than to say that 24 per cent of the sick of the Japanese Army were afflicted with beriberi during the Russian-Japanese War. The change of this food from polished to unpolished rice has practically stamped out the disease in the Philippines. This is a discovery since I left there, and I speak of it without practical knowledge, but only upon report, but I know that the disease was under examination by the expert pathologists and investigators during my entire stay in the Philippines, and that the present discovery is only in keeping with the progress and success made in every other direction in the official inquiries made into the causes of Tropical and Oriental diseases and their cure.

I may add that the investigations which have been made by our physicians into the character of the intestines of the native Filipinos indicates that those intestines are, if I may so say, a veritable "zoological garden" of germs, microbes, and bacilli that

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greatly enfeeble the race, and that by proper treatment might be eliminated, and the constitutions of the people at large greatly strengthened; and in the course of our stay in the Philippines I doubt not but that this method of strengthening the race will be pursued with greater and greater success.

With all this experience, secured by our army doctors, and those civilian physicians who followed them in Cuba, Porto Rico, and the Philippines, we came to the problem of the construction of the Panama Canal in a region as pest-ridden as any on the face of the earth. It is not too much to say that yellow fever and malignant malaria, known there as the "Chagres fever," contributed more than any other one cause to the failure of the French to build the canal, and when we went to the Zone to begin operations we found there lingering and ready to offer the same obstacles up to that time so fatal to success in this great work; but the Spanish War and the responsibilities it had thrust upon us had given such light on the method of meeting and reducing these obstacles that we have finally swept them away. It took two years for us to make the necessary preparations before we could begin the work of excavation and construction. Those were a hard two years, with thoughtless critics demanding when the digging was to begin, criticising every effort made, and prophesying a dismal failure for our work. But we had selected as our medical officer a man who had acquired his knowledge in Havana, and had practiced the new remedies there, and with the resources of the government at his back, Colonel Gorgas changed a pest-ridden zone into a district as free from disease as any of the states of the South. He stamped out yellow fever, so that for now more than four years, there has not been a case on the Isthmus, and he reduced the malignancy and extent of malaria on the Isthmus to such a point that the percentage of deaths in the foreign population in the Zone is considerably less than in our large cities. He has made the Zone a pleasant place and a healthful place to live in. This great work of construction goes on without thought now of the dangers which made French success impossible.

Is not such a record one upon which we can dwell with the utmost national pride? Does it not speak marvels for American courage, energy, and scientific thoroughness, skill, research, and power of original discovery? Other countries have been in the Tropics for nearly two hundred years, and yet I do not think it an exaggeration to say that in the short twelve years that we have

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been responsible for the health of our people in Tropical climates, we have made more progress in the discovery of methods of prevention and cure for Tropical diseases than all other countries have made in those two centuries.

And now we have a division of 18,000 men in Texas and California. They have been there for two months living under canvas and in a country soaked with rain and deep with profanity provoking mud. But so effective have been the regulative and preventative methods adopted to reduce sickness that the percentage of sick men is less than it was in the posts from which these men were mobilized. I need not recall the dreadful record of sickness from typhoid fever in the camps at Chickamauga and other camps established during the Spanish-American War. The percentage of typhoid cases was so high that it is hard to believe. Of 120,000 men there were twenty thousand cases, with a case mortality of 7 per cent. Of the volunteer regiments mobilized during the Spanish-American War, 90 per cent became infected with typhoid fever within eight weeks from the date of mobilization. To-day, two months after mobilization, with the modern health regulations and by the use of vaccination against typhoid, not one case of typhoid fever has appeared in the entire force, except that of one teamster who was not vaccinated. It is hard to credit the accuracy of such a record. But as I have it directly from the War Office, I can assert it, and give it as one more instance of the marvelous efficacy of recent medical discoveries and practice.

When we consider how in times past the efficiency of an army has been reduced by large percentages through disease, we can realize what an important part of the army the Medical Corps has become. But without reference to war, when we consider the enormous advances made in the discovery of methods of preventing disease in the Tropics, by members of the Medical Corps and under government auspices, and all within the last thirteen years, I think we may take pardonable pride in the record.

We expended many lives and much money in the Spanish War and in the discharge of the responsibilities that have followed that war. But they are as nothing compared with the benefits to the human race that have already accrued and will continue to accrue from the discoveries made under the conditions and necessities which the exigencies of that war and the governmental burdens following it presented.

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I congratulate the Medical Corps of the Army, I congratulate the medical profession at large (for these discoveries were not all made by army doctors) that they have had the opportunity and have seized it to make such progress in relieving the suffering of the human race and in becoming, in so conspicuous a way, the benefactors of mankind.

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A READY MEANS OF INCREASING MARCHING CAPACITY.

By Major William W. Reno, Medical Corps, U. S. Army.

BAREFOOT and sandal wearing races are notoriously better marchers than shoe-wearing peoples. History is full of testimony to this fact. To quote from Butler,—"Whenever shoe-wearing people are matched against shoeless people in marching the barefooted people show superiority." It seems that one of the penalties of civilization is decreased marching power. And one of the principal causes of this is not hard to find. A shoe limits the freedom of the foot and in time causes atrophy of certain foot muscles.

The normal foot is very flexible. Great freedom of action is needed in walking, running, jumping and climbing. The large joints of the foot must not be confined. The grasp of the toes against the ground and the backward push of the great toe is of value at every step. The longitudinal and transverse arches must be free to contract or expand with every variation in the load.

But the shoe has overwhelming advantages and is a necesary adjunct to civilization. And after all the great disadvantage of the shoe in marching is not so much in the fact that it is a shoe but that from childhood to old age the average person does not wear properly fitting shoes. His feet have become so deformed and so far removed from nature that great marching capacity is a physical impossibility. Fashion rules the foot as it does the woman's waist, and while it encases one in an unnatural vise of whalebone and steel it encloses the foot in a leather jacket that seldom fits. Modern society regards the small and narrow foot as the beautiful one. But if society could see the corns, ingrowing nails, bunions, hammer toes, and generally deformed feet that small shoes conceal, the style would quickly change.

Strange as it may seem shoes that fit normal feet are not manufactured. The so-called "common sense" or "orthopedic" shoes do not follow natural foot outlines. They are unsightly as a rule and frequently have dead spaces that are boxed or otherwise treated to prevent wrinkling. Dr. A. F. Wheat of Manchester, New Hampshire, who has spent considerable time in a critical study

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of feet and footwear states that he is yet to see a perfectly normal foot in an adult. This condition is the result of the prevailing custom of choosing shoes according to style and fashion rather than according to fit.

At the present time several shoe manufacturers are producing an attractive looking shoe, almost correct in shape and a great improvement over anything heretofore placed upon the market. This excellent shoe is, however, no doubt ephemeral. It will disappear as soon as the new styles arrive. The demand for it is not based upon its excellent lines but upon the fact that it is now *a la mode.*

The following extracts from letters from prominent shoe manufacturers explain the situation very clearly:

EXTRACT.

"The man who will buy purely anatomical shoes is the man who has arrived at years of maturity and discretion, but is not the fellow who creates Volume in shoe manufacturing. The fellow we have to cater to to-day is the young fellow who buys a pair of shoes because they are the latest thing, who will wear them a couple of months until they are a bit shabby and then buy another pair.

"The dictates of fashion in this respect run in waves, and we find that in going after the faddish stuff, we have to change the type of our lasts about every six months and the patterns to match.

"As the average profit to the manufacturer today in men's shoes that retail at $3.50 and $4.00 is not over 5c per pair, you can readily see that he has got to get a big volume in order to make any decent profit."

EXTRACT.

"The difficulty, however, in building shoes along anatomical lines is not usually a difficulty of manufacture, and is not due to the manufacturers not knowing what constitutes at least some of the principles of anatomical footwear, but it has been amply proven in our case that the public does not want, at least in any great numbers, shoes so made.

"To be successful in the shoe manufacturing game you have got to give the public what they want and not what you think they ought to have. Years ago we tried to give them a line of anatomically constructed shoes built of good materials and in the winter weights practically waterproof, at a price that ranged in

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those days about half a dollar more a pair than the ordinary kind. But life is too short and our capital too soon expended to educate the public against its will. We are all in business primarily for what we can make out of it, otherwise we are missionaries or perhaps doctors, seeking the way in which we could do the most good for humanity.

"I was forcefully impressed one day with a parallel another business man drew for me. He says,—'A school teacher is giving the public what it ought to have,—a first class actor is giving it what it wants.' Draw for yourself the conclusion as to who is making the most money.

"We quit making an anatomical shoe and have been giving them for the last six or seven years whatever they wanted, no matter how monstrous the shape. Take for instance the style in our catalogue marked 1145 and 1163, the most extreme and radical of fad fashion. It is nothing but ridiculous when viewed from a rational standpoint. Nevertheless we have not been able to make anywhere near enough shoes for these styles this season to meet the demand."

These extracts show clearly why the feet of American people are deformed and why they will continue to be deformed. There is no especial demand for correct footwear. The campaign of education needed to create such a demand in civil life appears formidable if not hopeless. But all our recruits come from this mass of people with deformed feet.

As great marching capacity is one of the essentials of a soldier our manifest duty is to exchange at once the ill-fitting shoes of recruits for those of proper size, insure that proper sizes are worn thenceforth and that any foot deformity is removed at the earliest moment.

That this is not done is clearly shown in an article entitled "A Ready Means of Increasing the Marching Radius of the Soldier" published in the Military Surgeon for last September. The data from the examination of the feet of 521 enlisted men are there analyzed. It is shown that 73.8% of these men were wearing ill-fitting shoes and that corns, callosities, fissures, ingrowing nails, deformed toes and hallux valgus existed in great profusion. It is also shown that these conditions seriously restrict marching capacity.

Concerning the great importance of marching efficiency Colonel Furse in his work "The Art of Marching," says—"Marching is the foundation of all operation in war. An army below the standard in marching power is at the mercy of a more mobile force.

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Actual battle consumes but a fraction of the time spent in marching. The most brilliant plans fail if the troops do not march the distances calculated upon. Mobility is the first requisite of the soldier."

As will be seen anything that restricts mobility demands profound consideration. As the 521 men examined were from one army post an effort has been made to extend the inquiry to other posts. Up to date the feet of 1,130 men from four posts have been examined and measured, and the resulting data classified.

The details of the 609 unreported examinations are as follows:

TABLE I.

Shoes worn: Correct length and width—101.

(Only 16.5% of the 610 men were wearing shoes that fitted them exactly.)

Condition of feet.

Good feet—41. Good feet, callosities—14. Callosities—26. Callosities and toes crowded—1. Callosities and ingrowing nails—6. Callosities, toes jammed or crowded, hammer toe—1. Toes jammed or crowded—3. Toes jammed or crowded, ingrowing nail—1. Ingrowing nail—8.

TABLE 2.

Shoes worn: Correct width, too long—16.

(Only 16 men were wearing a shoe of this description.)

Condition of feet.

Good feet but toes jammed or crowded—6. Callosities—2. Callosities, toes jammed or crowded—3. Callosities, toes jammed or crowded, ingrowing nail—1. Callosities, toes jammed or crowded, hammer toe—1. Toes jammed or crowded—2. Toes jammed or crowded, ingrowing nail—1.

TABLE 3.

Shoes worn: Too narrow, too long—19.

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Condition of feet.

Good feet—3. Good feet, callosities—1. Callosities—6. Callosities, toes jammed or crowded—5. Callosities, toes jammed or crowded, bunion—1. Callosities, bunion—1. Ingrowing nails—2.

TABLE 4.

Shoes worn: Too broad, too long—7.

Condition of feet.

Good feet—2. Callosities—3. Callosities, toes jammed or crowded—1. Bunion—1.

TABLE 5.

Shoes worn: Correct length, too broad—7.

Condition of feet.

Good feet—2. Good feet, callosities—1. Callosities—1. Callosities, ingrowing nails—2. Toes jammed or crowded—1.

TABLE 6.

Shoes worn: Correct length, too narrow—34.

Condition of feet.

Good feet—3. Good feet, callosities—2. Good feet, callosities, nails deformed—2. Callosities—5. Callosities, toes jammed or crowded—7. Callosities, toes jammed or crowded, ingrowing nail—2. Callosities, ingrowing nail—1. Callosities, toes jammed or crowded, hammer toe—1. Callosities, bunion—1. Toes jammed or crowded—1. Ingrowing nails—6. Toes jammed or crowded, ingrowing nails—3.

TABLE 7.

Shoes worn: Correct width, too short—172.

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Condition of feet.

Good feet—3. Good feet, callosities—2. Good feet, toes jammed or crowded—3. Good feet, toes jammed or crowded, callosities—2. Good feet, callosities, nails deformed—1. Callosities—8. Callosities, toes jammed or crowded—25. Callosities, toes jammed or crowded, bunion—2. Callosities, toes jammed or crowded, ingrowing nail—31. Callosities, ingrowing nail—7. Callosities, toes jammed or crowded, hammer toe—10. Callosities, bunion—2. Callosities, ingrowing nail, bunion—1. Toes jammed or crowded—31. Toes jammed or crowded, ingrowing nail—40. Toes jammed or crowded, ingrowing nail, hammer toe—1. Toes jammed or crowded, hammer toe—1. Bunion—2.

TABLE 8.

Shoes worn: Too broad, too short—150.

Condition of feet.

Good feet—3. Good feet, callosities—2. Callosities—3. Callosities, toes jammed or crowded—45. Callosities, toes jammed or crowded, bunion—5. Callosities, toes jammed or crowded, ingrowing nail—31. Callosities, ingrowing nail—4. Callosities, toes jammed or crowded, hammer toe—12. Callosities, ingrowing nail, bunion—2. Toes jammed or crowded—6. Ingrowing nail—1. Toes jammed or crowded, ingrowing nail—33. Toes jammed or crowded, ingrowing nail, hammer toe—3.

TABLE 9.

Shoes worn: Too narrow, too short—103.

Condition of feet.

Good feet—1. Fat feet—2. Callosities—7. Callosities, toes jammed or crowded—31. Callosities, toes jammed or crowded, bunion—9. Callosities, toes jammed or crowded, ingrowing nail—16. Callosities, ingrowing nail—6. Callosities, toes jammed or crowded, hammer toe—3. Callosities, bunion—2. Callosities, ingrowing nail, bunion—2. Toes jammed or crowded—6. Toes

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jammed or crowded, ingrowing nail—16. Ingrowing nail—1. Toes jammed or crowded, bunion—1.

Note.—In these tables corns and callosities have been included in the term callosity. In many instances where the classification says toes jammed or crowded both conditions were present. By jammed is meant that the toes were crumpled upon themselves into a compact mass. By crowded, that they have not sufficient lateral freedom and are mashed into each other. Ingrowing nail may mean one or many. Such disabilities as flat foot and other foot ills not directly traceable to wearing ill-fitting shoes have been omitted. Also such more or less transient lesions as congested areas of skin, pale and cold feet, indicating deficient blood supply, marks of shoe pressure, etc.

These tables present a terrible arraignment of the condition of soldier's feet. Of the 609 men examined 508 were wearing shoes that did not fit their feet! 476 of them were wearing shoes either too narow or too short or both. It will be noticed that from Table 1 to Table 9 the foot injury increases in severity as the shoes depart more and more from the proper size. The conditions found in the four posts examined do not differ materially from those found originally at one post. That similar conditions prevail throughout the Army is very probable. The desire for small shoes existing in civil life has not been cast off in the army. Foot injury and ill-fitting shoes are so common that one is almost led to believe that marching efficiency is the last thing considered.

Moreover, the foot injury noted in these tables does not disclose all the damage incident to ill-fitting shoes. A type of foot injury far more serious than any noted is very prevalent. It is the crowding of the great toe out of its natural alignment or hallux valgus. A large percentage of the total number of men examined, one thousand one hundred and thirty, had this as a permanent condition. And practically all of the men had it temporarily while wearing army shoes. The seriousness of hallux valgus must not be underestimated. This condition as surely reduces marching capacity as night follows the day.

Figure 1 shows a pair of soldier's feet with hallux valgus. The line drawn across each foot is Meyer's line; so called after Dr. Hermann Meyer, the first man to formulate correct lines for footwear. The axis of the great toe should fall within this line. Or as Meyer stated the condition ,"The great toe must lie in such a position that its axis when carried backward shall pass through the center of the heel."

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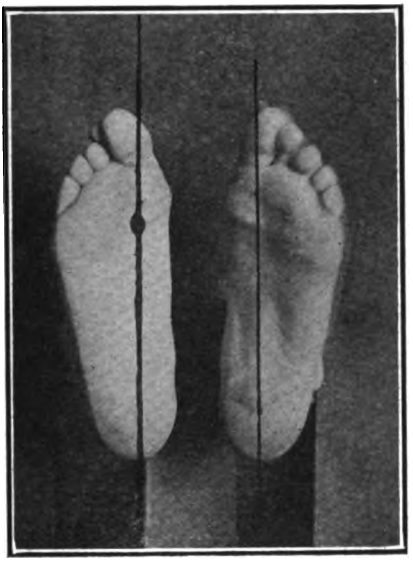

Figure 1.

In general terms the foot is a lever of the second class. The fulcrum is at the ball and great toe, the power at the heel—transmitted through the tendo-Achilles from the calf muscles,—and the weight, the body, is between. This lever is the prime factor in marching. The leg and body muscles, except as mentioned, are concerned principally with balancing the load or shifting the levers, the feet.

A foot with hallux valgus is a lever with a lateral bend at its fulcrum end. No workman would think of using such a lever as the loss of power would be tremendous. Why should a soldier march with such levers. In exactly the same proportion as the great toes are bent is the efficiency of the foot as a lever reduced and marching capacity lessened.

Nor does this exhaust the serious disability of hallux valgus. At every step as the foot leaves the ground the great toe by virtue of its intrinsic muscles and leg assiistance gives a final backward push that is of material aid in propelling the body. The effectiveness of this backward push is greatly increased as the body is already falling forward for the next step when it is applied. The continual loss of power in the backward push caused by hallux valgus is a further potent factor in decreasing marching capacity.

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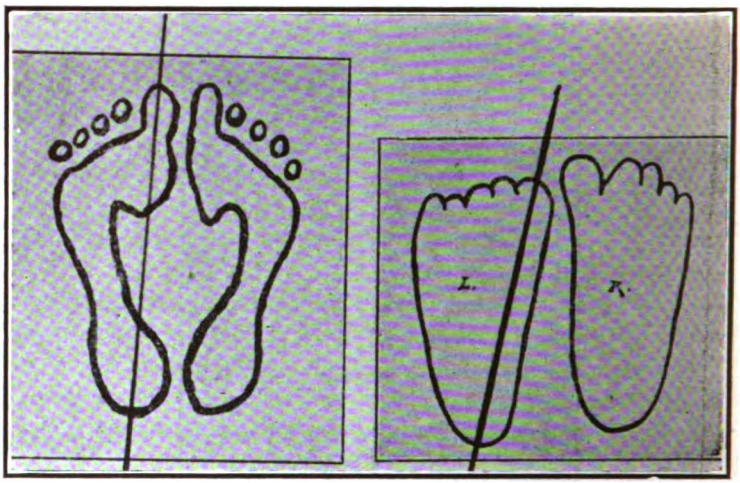

Figure 2.

The illustrations herewith outline clearly the evils of hallux valgus. Figure 2 presents the footprints of an Arab who never wore shoes. Also the outlines of a baby's feet. The feet of neither have been deformed by shoes. Note how Meyer's line and the axis of the great toe coincide.

Figure 3 is an X-ray picture of the left foot of Soldier No. 1121. This is a case of permanent hallux valgus. This soldier has worn shoes so widely removed from his proper size that the limit of flexibility was passed and permanent deformity produced.

Figure 4 shows the same foot enclosed in the same shoe he was wearing at the time of the examination. The shoe is two sizes too small. Note the increased hallux valgus.

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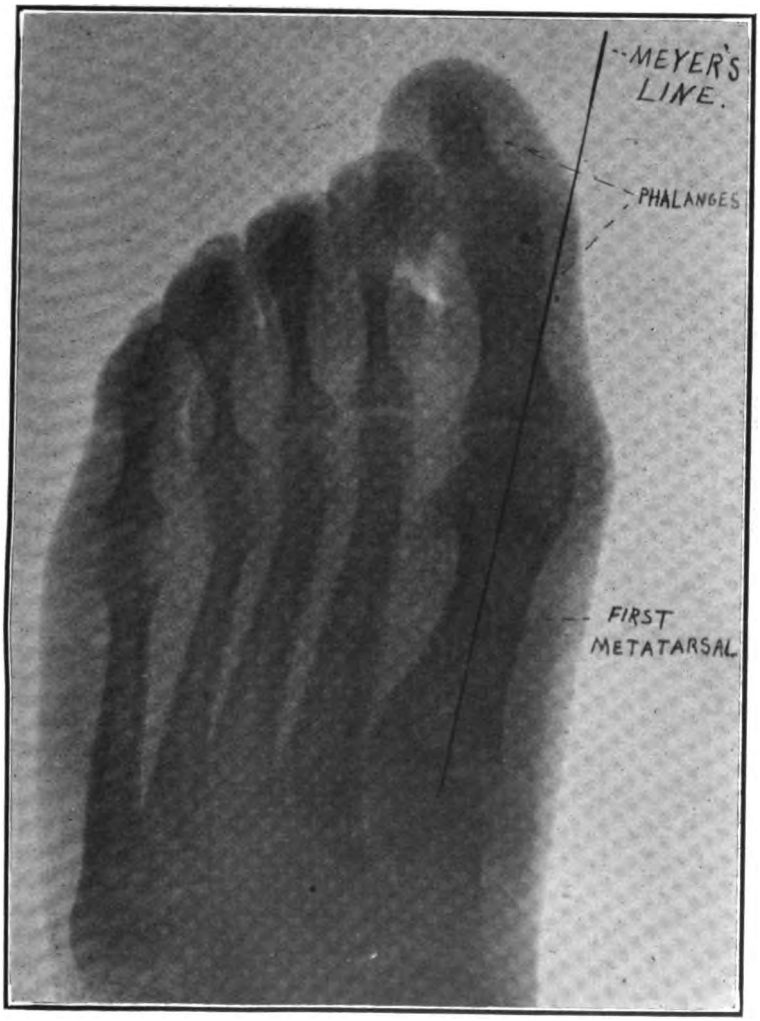

Figure 3.

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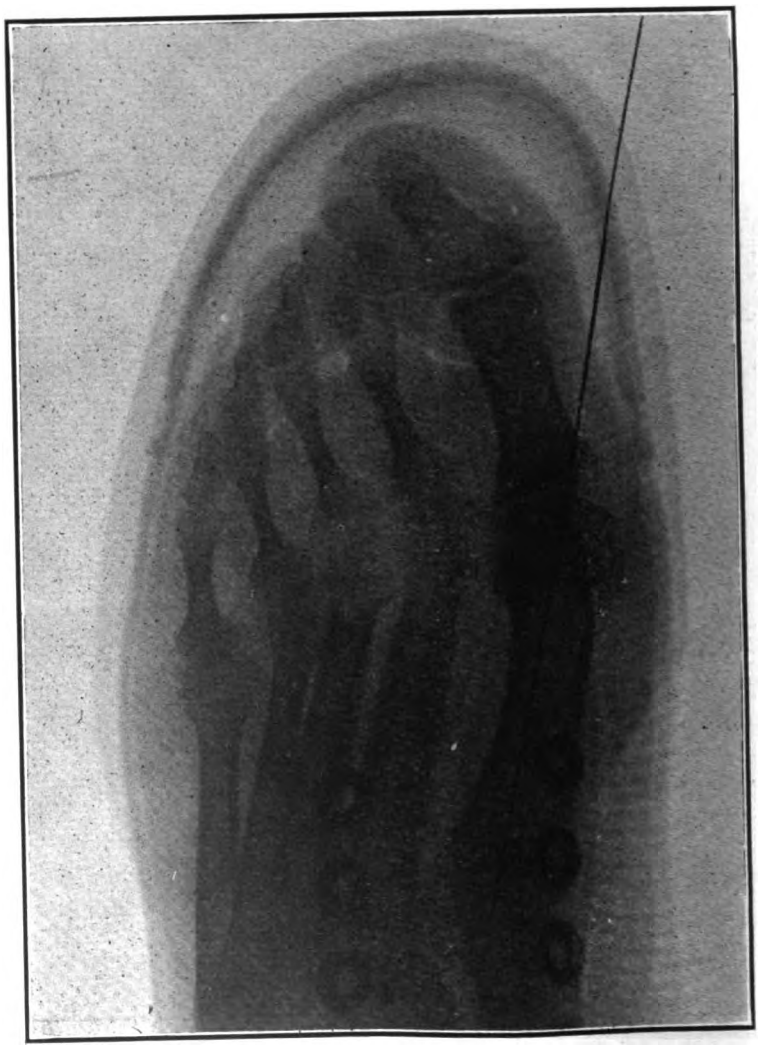

Figure 4.

Figure 5 is an X-ray picture of the foot of Soldier No. 1119. There is practically no hallux valgus in this foot.

Figure 6 shows the same foot in an army shoe of correct length and width. Observe the hallux valgus induced. This picture

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illustrates very clearly the greatest fault of the army shoe. A properly fitting army shoe causes temporary hallux valgus.

This is most serious. Temporary hallux valgus is as bad as permanent as, with the shoes now in use, it is always present when the soldier is marching.

Figure 5.

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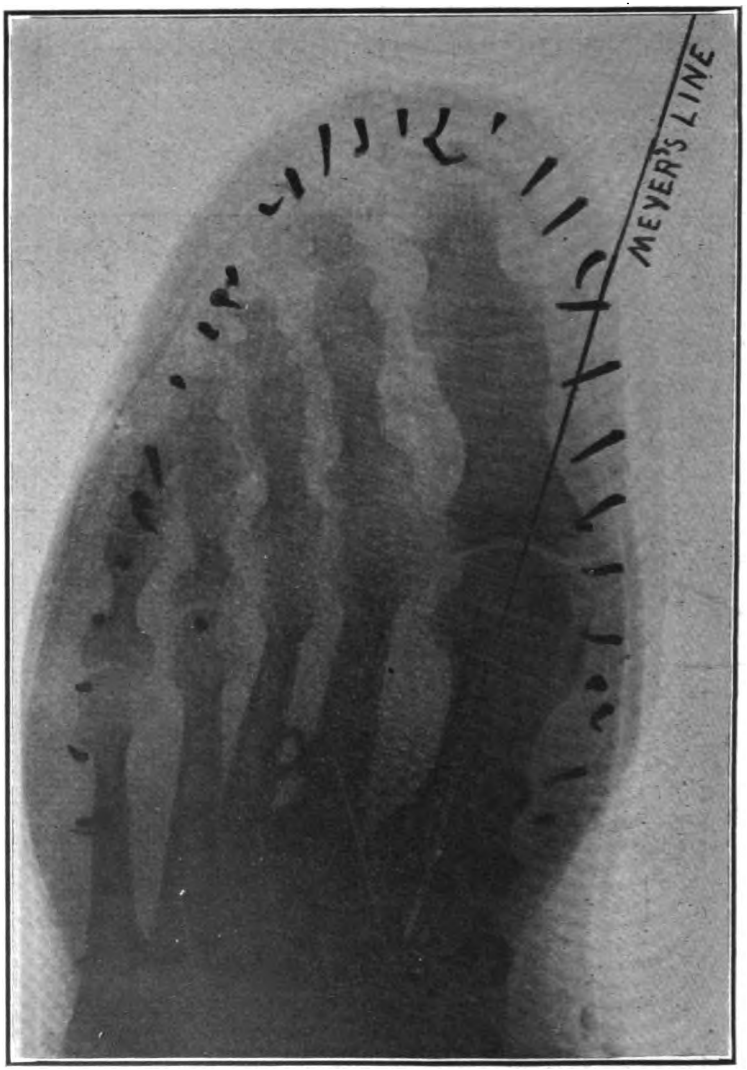

Figure 6.

(A simple test for permanent hallux valgus is as follows: Place the bare feet alongside each other. If they touch from the heel to the end of the great toe there is no hallux valgus. To test whether shoes cause temporary hallux valgus.—Place left and right shoes alongside. If they do not touch each other along their inner border from heel to toe they cause temporary hallux valgus. Also if they

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push the great toe beyond its limits of flexibility they will cause permanent hallux valgus.)

Evidence of the deficient marching power of our army is not lacking from other sources. In the last report of the Inspector General of the Army, Major George Bell, Jr., Inspector General, Department of the Columbia, says,—

"While the infantry is composed of the best material in the world and is as well if not better trained in the use of the rifle than any other army, its marching capacity is below mediocrity; and yet it is admitted today that the fate of battles of the future depends, as it has in the past, upon the marching capacity of the infantry."

Major Bell notes as a partial cause for this marching capacity "below mediocrity" as follows:—

"Training in marching should be upon a par with rifle firing for Infantry, and, therefore, during the field training season all officers and men upon detached duties from their posts, such as map work, etc., should be required to return to their command for this training. That the marching of the Infantry is not up to the standard is partly due to the fact that so many of the officers and men are excused from the marches, as the practice still prevails in many large garrisons of taking men for guard, fatigue, and other duties from all organizations."

The reasons advanced by Major Bell are no doubt potent ones. It might also be added that inducements are greater for good shooting than good marching. The expert rifleman gets extra pay every month. The expert marcher gets nothing. Why the discrimination?

Improvement is needed in all possible directions. But just as a good rifle is necessary for expert shooting so is a well-fitting shoe necessary in marching. Good shooting is impossible with a poor rifle. Excellent marching can not occur while wearing shoes that cause corns, bunions, ingrowing nails and a variety of other foot injuries. As our soldiers are equipped with excellent rifles and ill-fitting shoes it is not surprising to find testimony of excellent shooting and poor marching.

From an examination of the data herein presented it is readily apparent that foot deformity as found in the army can be divided into two classes. The first class includes all injury of a more or

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less temporary nature such as callosities, corns, fissures, ingrowing nails, deformed toes, etc. Blisters also belong to this class. They do not appear in the classification as the examination was not made after a practice march. Tender feet, the result of lack of practice in marching, is a great cause of blisters; yet tight shoes are a greater factor as they throw the soles of the feet into folds. The wearer of such shoes is continually walking upon wrinkles in his feet.

The disabilities of Class 1 decrease marching capacity by causing more or less pain or discomfort at every step, a limping gait and a loss of buoyancy of spirit. Men with this kind of foot injury fill to overflowing the ambulances and other means of transportation.

Class 2 is composed wholly of hallux valgus and its occasional sequela, bunion. A large number of men have hallux valgus as a permanent condition, while practically every soldier has it temporarily when wearing army shoes. The only exceptions are those few men who wear shoes too long and too wide.

As to the first class of disability practically all of the enormous amount of it can be removed with the shoes and other means now available in the army. Insure that at all times each soldier wears shoes of correct length and width. With foot freedom, nature will usually cast off the corns, etc., formerly needed in self defense. The foot injury that does not disappear after proper shoes are worn should receive medical attention. A few of the foot ills of Class 1 may still remain as army shoes, built from civilian lasts, are not properly proportioned for soldiers' feet. It is believed, however, that fully 95% of the injury now found would disappear.

Yet it is no easy matter to fit every soldier with shoes that fit his feet, and maintain the condition. Shoes of the sizes desired are often not in stock in the quartermaster storehouse. Also few men really know their proper size. The lifetime habit of choosing shoes that are too small has destroyed good judgment. The only safe way to obtain a proper fit is to determine by measurement the length of the foot and the circumference at the ball and then try on the size indicated. Also try on the shoes a letter wider or narrower if necessary. (Theoretically you can measure feet and then order proper shoes. Practically, feet are not so easily catalogued as bunions, corns, etc., often make another size imperative —at least, for a time). Shoes indicated by foot measurement al-

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ways seem too large* when first worn. The foot has been cramped so long it misses its accustomed prison. Such shoes, however, when worn for a while will never be discarded.

The record of shoe sizes kept in every company per General Order 48, War Department, April 8th, 1911, if not based upon foot measurement and actual trial of sizes should be so amended. In addition to this, a record should be kept of the condition of each soldier's feet. Every corn, fissure, ingrowing nail or other foot injury should be noted. This record should be continued until every man has perfect feet.

Whenever shoes of sizes desired are not in stock in the shoe storehouse authority should be secured to get them promptly by mail or express from the nearest Shoe Depot. It is never wise to accept the nearest available size. One pair of ill-fitting shoes can cause foot injury that may last indefinitely.

The disability of Class 2, hallux valgus and its sequelae can not be banished so easily from the army. An entirely new shoe with certain changes in its pattern is required. This does not signify that a huge and ugly shoe is necessary. Our army shoes justly stand first in the militant world for material, style and workmanship; yet none of these attributes need be sacrificed in producing a shoe anatomically correct. The shoes now in use if modified slightly would not deform a normal foot and would permit deformed feet to regain, in time, their natural outlines.

Before this new shoe is manufactured lasts for it should be developed from the measurement of the feet of practically all the soldiers in the army. The stocky, muscular feet of the average soldier are very different from the long, slender undeveloped feet of the average civilian, the man whose feet mold the lasts now in use. Meyer's line should also receive due attention.

There is one simple sovereign remedy for all adverse shoe and foot conditions mentioned herein, and that is frequent and careful foot and shoe inspection. A daily foot inspection by noncommissioned officers, a weekly inspection by company and an occasional inspection by medical officers would produce wonderful results. Defects in shoe administration would rapidly disappear. The general increase in knowledge concerning shoe and foot requirements would create such a demand for proper footwear that the supply would soon be forthcoming.

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*Careful direction for foot measurement will be sent to anyone upon request.

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RECAPITULATION.

1. Foot deformity, due to wearing ill-fitting shoes, is common in civil life.

2. It is also prevalent in the army.

3. As found in the army it falls into two classes. Class 1 is readily removable with the means now available; the removal of Class 2 requires a new type of shoe.

4. Both classes restrict marching capacity.

5. This decreased marching capacity can be overcome by frequent and careful foot and shoe inspection.

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A PSYCHOPATHIC MALINGERER.*

By Passed Assistant Surgeon Heber Butts, U. S. Navy

IN presenting the following case I do not wish to be understood as seeming to criticise in any way the official actions of my superiors. But it presents so many items of interest from economic, from administrative, from disciplinary, and from psychiatric points of view that it seems to me it is worthy of careful study. The case may seem unusual, and it is, even in mental medicine, but it illustrates much more forcibly and clearly than any other case I might choose some of the recruiting, pensioning and psychiatric problems with which the Naval Service is confronted. And some or all of the many aspects of this very case have already come, or will come sooner or later, I feel sure, within the experience of every Army or Naval Medical Officer. Most of them have come within my experience on more than one occasion.

The patient, having learned in some way or other that I had been ordered to special duty at the Government Hospital for the Insane, wrote me a very well composed letter, briefly detailing the circumstances of his commitment to the institution, and requesting me to examine him as to his sanity, with a view to his discharge. I immediately complied with his request, and on April 12, 1910, he was discharged from the institution as "not insane," having shown no symptoms of insanity while in the institution.

Case.—J. C. F., No. 28,226. Organization, Landsman (for yeoman), U. S. Navy, age 25 11-12 years. Admitted to the Government Hospital for the Insane, Washington, D. C., November 16, 1909. Diagnosis, "Dementia."

Family History.—No history is obtainable about grandparents, except that they were "healthy and long-lived." Father died at age of 53 years, tuberculosis being probable cause of death. Mother died at age of 35 years, cause unknown. Patient was two years old when she died. One brother and four sisters living.

*Read at the 19th Annual Meeting.

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All are in good health, except one sister, who is described by patient as being "very thin and nervous." This sister is married and has two children. Patient is the youngest [illegible] in his father's family.

Personal History.—Patient was born April 17, 1884, at Atlanta, Ga. Birth normal so far as can be ascertained. He has had none of the diseases of childhood except measles, from which he made a good recovery. Had chancroid in 1903, duration about 2 months; and gonorrhoea in 1908, duration about 5 months, from both of which he made good recoveries. No history of syphilis, malaria, rheumatism, neuritis or any drug addiction. He is an almost total abstainer from the use of alcoholic liquors.

Patient entered common school when he was 8 years old, having previously been in kindergarten school. He graduated from grammar school when he was 12 years old. He states that when he was at school he was never studious, but he learned very easily and made very rapid progress. He states that all of his teachers were impressed with the fact that he was very bright and very lazy, and several of them told him that he could accomplish far more results with much less effort than the average pupil if he were not so lazy. One teacher told him that he could learn more in a day than one of his classmates could in a week. These things they told him many times. He thinks he must have passed his school examinations because of his "impromptu reasonings," as he never studied, and the fact that he passed them at all surprised himself more than anyone else. He feels that he did not deserve to pass. He states without apparent egotism that he is very shallow on some subjects which he studied at school, and since leaving school, and very profund on other subjects.

At about the age of 15 years he became greatly interested in psychology and hypnotism. He studied these subjects as an amusement. He has read a few of Prof. Meyers' Reports to the English Society for Psychological Research; Hudson's "Law of Psychic Phenomena;" Hudson's "Divine Pedigree of Man;" Hudson's "Evolution of the Soul;" Hudson's "Scientific Demonstration of a Future Life;" Hudson's "Mental Medicine;" a few magazine articles by Prof. Hugo Munsterberg, Professor of Psychology at Harvard University; Prof. Oliver Lodge's "Report to the Royal Society of Psychical Researches;" Lombroso's "Experiments on Eusapia Paladino;" Hamilton Garland's "Shadow

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World;" Haeckel's "Riddle of the Universe," and three different charlatan's works. He states that he has given two public demonstrations in hypnotism, one on an Army Transport, and one at the Y. M. C. A. Building at Atlanta, Ga., and numerous hypnotic demonstrations in the homes of friends. He has given three public lectures on psychology. He also claims to have made a special study of the life of Joan of Arc, and expresses great admiration for the character of Elbert Hubbard, whom he regrets to think is greatly misunderstood in America, and whom he styles "Fra Elbertus."

He repeated from memory an essay, a name for which he has not yet chosen, which he composed in December, 1909, while a patient at this Hospital, of which the following quotation is a portion:

"God had a dream, and millions of worlds were the woof thereof.
Everywhere was life, hot, spreading, escaping.
The germ of the seed of my soul existed.
I romped and played in exhilarating glee,
And eons dissolved into the spirit of my joy.
I suckled at the breasts of Eternity, and imbibed
Immeasurably long draughts of life—draughts of wisdom,
For I had solved the riddle of the universe,
And I untied the Knot of Chaos!
In everything I see God, the maker of the dream
In myself, for in the image of Him made He me.
I saw the plans of the dreamer. I saw in panoramic view
Serenity, equanimity, suffering, suffering, suffering—
So many kinds of suffering. Then serenity and equanimity.
Great glowing suns painfully sent forth issues
Which revolved around them, drawing sustenance and heat
From the maternal source. I witnessed these obstetrical
Masterpieces. Ions sought ions. Atoms became communal,
And ether smiled." * * *

He also recited from memory several of his own original poems. These included a poem on "Procrastination" and a parody on Edgar Allen Poe's "The Raven." He entitles this parody "The Rathskeller." It was written as an advertisement for a Rathskeller of Chattanooga, Tennessee, and was used as such. Both have considerable merit as poems.

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After leaving the grammar school he worked for one year in his brother-in-law's store at Savannah, Georgia. During this time he states that he did a great deal of reading and thinking, and was considered as a useless chap, by his brother-in-law, who, nevertheless, got all the work he could out of him. He then left his brother-in-law, and ran errands for about a year and a half, at $2.50 per week. Becoming dissatisfied he went to New York and lived with an uncle. After securing and voluntarily leaving, because of personal dissatisfaction, several minor positions in that city, he entered the employ of the New York Life Insurance Co., and was promoted from messenger, at $15.00 per month, to Assistant Cashier, at $40.00 per month. At this time he was 17 years old, and was bonded in the National Surety Co., had access to the cash and renewal receipts, and his checks were honored by the banks. Becoming homesick, he voluntarily left this employment, and returned to his brother-in-law's store in Savannah, Georgia. He very soon became dissatisfied again, and reentered the employ of the New York Life Insurance Co., but this time in their branch office at Atlanta, Georgia. He was Application Clerk, at $30.00 per month. He left again after nine months' employment, and went to Jacksonville, Florida, to help his sister for six months in keeping a restaurant. He did not like this work because it consumed fifteen hours per day, and he "didn't feel fitted for the work anyhow."

In May, 1903, he enlisted in the U. S. Navy as Landsman at Pensacola, Florida. He was transferred to the Yeoman's School, Brooklyn Navy Yard. At the end of four months he took the examination for Yeoman, and purposely failed in order that he might be discharged for inaptitude. He was discharged for inaptitude the latter part of 1903.

November 13, 1903, he enlisted in the Cavalry branch of the U. S. Army, under an assumed name, and was given an honorable discharge, character "excellent," after three years' service.

Now he secured six months' employment as Discount Teller's Helper and Collector in the Hamilton National Bank of Chattanooga, Tenn. He left to reenlist in the U. S. Army in May, 1907, and was stationed in New York City. He was promoted to Corporal in January, 1908. In September, 1908, he purchased his discharge from the Army and entered the Valparaiso (Ind.) University. He paid for a tuition card, but did not have sufficient money to board himself while going to school, so he made

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arrangements to work in the kitchen for his board. Within a week he became dissatisfied, and after an agreeable arrangement with the Dean he left the University and went to Chicago to secure employment, planning later to return to the University.

Not readily securing employment in Chicago, and his money being nearly all spent, he reenlisted in the U. S. Navy as Landsman for Yeoman July 21, 1909, and was immediately transferred to the Narragansett Training Station at Newport, R. I. After three months' service in the Yeomen's School at that station he was transferred to the Hospital Corps, at his own request, for probationary duty as Hospital Apprentice.

Present Illness.—During his short probationary period as Hospital Apprentice he assured the medical officer with whom he was serving that he felt he must commit suicide before very long, as he did not feel he was in his right environment, and that he was so unhappy. He states that the surgeon tried to console him, telling him that he would get accustomed to the Navy and like it after awhile. The patient told the surgeon that his consolation was not effective at all, that he came to him for something less abstract, for some material aid, such as a different environment, or a sedative, and he mentioned that a transfer would probably help him. He told the surgeon that remaining on the scene of his discontent only augmented that discontent. The next day he was locked up in the observation cell and was one week under observation. He states that before he was locked up he really felt that he would have to put an end to himself, as he was so unhappy at the thought of four years to serve in the Navy.

Shortly after his confinement, however, he felt much better, so much so that his medical officer told him he was "not so flighty." This statement led patient to fear that he might be restored to duty, so he resolved to fake insanity, though he really felt much better. To this end he asked to be permitted to select a book from the library, and, seeing the book he desired, he kicked a hole in the glass door of the library. When asked for an explanation of his action, he replied that he "didn't have time to wait for the key." He also entered into a conspiracy with a Hospital Apprentice to help him fake insanity. He suggested to the Apprentice that he would walk into the ocean when he was taken out of his cell for exercise. This scheme was agreed to, and they shook hands upon it, but it was abandoned because the

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Apprentice did not want to get his shoes spoiled with salt water in going after him.

Hospital ticket states that the patient was admitted to the Naval Hospital at Narragansett Bay, R. I., on November 6, 1909, and that "at that time he was in an extremely depressed state and wished to take his life, but did not care for a painful death, stating that he preferred the agent of death to be prussic acid. As far as can be ascertained there is no family taint other than that his father died of tuberculosis. Patient's age at the time was two years. This patient is apparently well read in psychology and states his own case in such sentences as follows: 'I know that I am mentally abnormal, but I cannot adapt my personality to suit my environment. That I am a personality and not a person I fully realize, and the fact is exceedingly amazing to me.' Periods of depression are followed by exhilaration, depression being greater. When exhilarated he is an extreme altruist and wishes to be crucified to save his fellow men; when depressed he is a thorough pessimist and writes long poems on the rottenness of humanity and suggests all manner of persecutions."

Patient states that everywhere he goes he gives people the impression of his intellectual superiority and practical inferiority. He shows no evidence of egotism or flight of ideas.

On admission to the Government Hospital for the Insane patient was quiet and amiable in disposition, was well oriented, and had perfect insight into his condition. No delusions or hallucinations could be elicited, and at no time did he show any evidence of mental derangement. He ate and slept well and assisted in light work on the ward and in the kitchen.

Physical Examination.—Patient is a rather slender built youth of nearly 26 years, weight 128 lbs, height 66½ inches, complexion fair; hair is dark brown in color and luxuriant in growth. Tip of right index finger has been amputated. Patient was circumcised when a child, but the foreskin is adherent at one point to the back of the glans, and there is a small scar on the right side of the glans. His feet are rather flat. The left shoulder is somewhat higher than the right shoulder. Three vaccination scars appear on left arm.

Respiratory and circulatory systems are normal. Position, size, and sounds of heart are normal. The genito-urinary system is normal, except as noted. Urinalysis is negative.

Gastro-intestinal tract: The palate is rather high and unduly

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arched. The tonsils are very slightly enlarged. The teeth are in fair condition, two upper bicuspids missing. He is constipated at times.

The glandular system is normal.

Neurological Examination.—All muscles are of good tone and development, and no abnormalities of voluntary or involuntary movement are to be observed. The extended hands show no tremor. All reflexes are normal, and there is no ankle clonus. Coordination of all movements is normal. There is nothing abnormal to be seen in his gait. The special senses of smell, taste, hearing, and vision are normal. The face is slightly asymmetrical, and there is slight ptosis of the left eyelid. Irides are blue. The pupils are of normal size and outline. They respond promptly to direct and consensual light, to accommodation, and to reflex irritation.

Mental Examination.—Patient is well oriented as to time, place, and people. He shows no evidence of dementia. On the contrary, he has a remarkably good memory for both recent and remote events. He can repeat from memory a good part of many poems, such as the "Psalm of Life," "The Raven," and "Thanatopsis," which were selected at random for him to repeat; he remembers the date of the battle of Waterloo and the names of most of the countries of Europe and their capitals.

Speech is normal, and he repeated correctly all test-words and phrases which were given him. His speech is slow and deliberate. His conversation is coherent and rational at all times, and he shows no evidence of circumstantiality or flight of ideas. When he is asked to repeat something from memory, as, for example, a poem, he frequently covers his eyes with his hands or his handkerchief. He states that this is merely a habit with him when he is trying to remember anything, or memorize something which is being said to him.

No delusions or hallucinations are present. He takes an unusual interest in, and readily adapts himself to, his surroundings. He is bright in appearance and tidy in his habits. He shows no evidence of depression. His perception, reasoning, and judgment are good. He expresses himself as well satisfied with the care taken of him in this institution, but he is very self-analytical, and his attitude toward himself and his environment is not satisfactory. He is anxious to be discharged, as he does not feel that the institution is his proper environment, and that he is wasting

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precious time here. He states that he thinks a discharge from the Navy would have had quite as much "therapeutic value" as sending him to this institution, though, in his opinion, the board of medical officers were quite justified in sending him here, one having told him that the Navy was no place for him, and that here he would be free from worldly cares and could recuperate. When asked what he would do if discharged from this institution and the Navy, he replied, "I would go to New Mexico, which is the climate for weak lungs, and would stake out a claim for a half section, or 320 acres, of Government homestead land, upon which land sufficient grass grows all the year round to feed a large number of stock, thereby eliminating almost entirely the cost of fodder and provisions for the stock. I have a friend down there now, who is waiting for me, and I would not be alone."

He performed all arithmetical calculations promptly and correctly, and the months of the year and days of the week were correctly stated forwards and backwards. The sequence of numbers containing four, five, and six digits was also correctly given by the patient. His fund of general information is usually large.

Summary.—The family history of this poetical, wanderlust-afflicted Landsman, U. S. N., is negative, except that his father may have died of tuberculosis, and one of his sisters has not had very good health. As a child he was evidently unusually precocious. He seems always to have been studious and eccentric, though probably never actually insane. He has read quite extensively for a young man of his age, but his reading has been chiefly on metaphysical subjects which have been of little practical value to him. He is evidently possessed of considerable clerical ability, or he could not have held the positions he has held, or secured the excellent recommendations he carries from persons by whom he has been employed. He readily gives a clear, connected account of himself, talks coherently, does not endeavor to deceive, has good insight, and is very bright and intelligent; has never remained long in any employment. He seems to be of a moody disposition, and feigning insanity and threatening to commit suicide occurred to him as the most expeditious way of getting out of serving an unsatisfactory four years' enlistment in the Navy. But he would much rather have been discharged for the good of the service than to be sent to the Government Hospital for the Insane. He complains of nothing. His mem-

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ory is excellent for book knowledge and for all the events of his life. He has some poetic ability.

Diagnosis.—On March 19, 1910, I presented this case for diagnosis at a conference of the medical officers of the Government Hospital for the Insane and stated my belief that, from the evidence obtained, the patient was a precocious psychopath, who had malingered and who should never have been enlisted in any military service. I also stated that I believed he should be discharged from the institution as "not insane." It was unanimously agreed that the patient was a psychopath, who had had a simple depression previous to coming to the hospital, such as psychopathic individuals sometimes have, and that he should be discharged as "not insane." The opinion was also expressed that the patient was unfit for the naval service.

In summarizing the case the Superintendent, Dr. William A. White, stated that a malingerer is almost invariably either insane or a psychopath, and to that extent malingering is not to be held against him; that his experience causes him to regard the actions of this patient as being more in the nature of an abnormal demonstration than an attempt to do something which he should not have done, and that if he has malingered it is so closely associated with the necessary result of a psychopathic makeup he did not think he ought to be punished.

Conclusions.—Having decided that the man is unfit for he Naval Service, the question naturally arises, "Would it have been possible for a Medical Officer to have apprehended him at any one of the four recruiting stations at which he has appeared and rejected him for enlistment by any form of *mental* examination, and, if so, how might it have been done?" The medical officers of this hospital do not think it would have been possible to have excluded this patient from the service by any form of mental examination. I think, however, that in the absence of any official form of mental examination a good, conservative rule to adopt would be to *reject all candidates for enlistment who are, or seem to be unusually precocious or brilliant for their years, or who upon examination show any more or less marked eccentricity of manner or speech which is clearly not due to embarrassment.* Such individuals are usually abnormal in some way or other, and a careful examination will usually reveal one or more of the stigmata of degeneration—an asymmetrical face with slight ptosis of an eyelid and rather flat feet, as in this case, or an

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asymmetrically shaped head, a congenitally deformed nose or ear lobes, an abnormally high-arched palate, or even a cleft palate, or a hair-lip, which have been surgically repaired in infancy; deformed and irregularly placed teeth, and many others. No one, or even several, of these stigmata of degeneracy might seem in themselves sufficient cause for the rejection of an otherwise apparently desirable recruit, but when associated with some eccentricity of manner or speech, or precocious mentality in any direction, or inability to give a clear, connected account of the events of past life, the combination should, it seems to me, be sufficient cause for rejection. Such psychopathic people are almost always afflicted with "Wanderlust" to a more or less marked degree, and it is very difficult, or quite impossible, for them to adapt themselves to any environment for any great length of time. Especially is this true of a military environment, because of the to them irksome rules of conduct and discipline with which they must necessarily come in contact and observe.

This case serves to illustrate very forcibly the desirability of requiring all candidates for enlistment to serve a certain definite period of probation at some fairly convenient naval or training station or training ship, where, under essentially service conditions, the character of the would-be recruit may be observed by both the administrative and medical officers of the service. Such a practice would be a genuine economy, as compared with the one which now obtains in both the Army and Navy of enlisting at once for three or four years almost any man whose physique does not differ too greatly from certain specified standards and with whom both the medical and the administrative officers on duty at the recruiting station cannot possibly have more than a few moments' acquaintance.

Such a practice, too, would work no hardship, or render the Naval Service less attractive to deserving and desirable candidates. On the contrary, it would markedly tend to promote contentment and happiness among the enlisted personnel of the Navy; the psychopath and the neuropath, or the neurasthenic, who perhaps could or could not have been detected at the recruiting station in the few moments only which could be given to his examination for a three or four years' enlistment, would soon discover for himself that the Naval Service was no place for him, and he would in the majority of cases gladly and voluntarily

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leave it at the end of his short probationary period. Thus he would not be a figurative thorn-in-the-flesh of the Service for three or four long dreary years, a frequent victim of summary and general court-martials for infractions of discipline, drunkenness, or crime, perhaps an occupant of a naval prison for two or three years at Government expense, or a worthless man more or less constantly getting, or trying to get, on the binnacle or sick list for imaginary or real ills.

And if undesirable men failed to discover the fact that they were not adapted to the Naval Service, surely the observing eye of an efficient line or medical officer at the station or ship where the probationer might be on duty would detect that fact for him before the expiration of that period of probation. It seems to me that for all practical purposes that period of probation would not need to exceed five or six months. Thus early in their service could be weeded out the defective and undesirable men who were not rejected at the recruiting station, and in this way it would be possible to eliminate from the service *early* a large percentage of the many defectives, psychopaths, actually or potentially insane, neurasthenics, and others who at present are far too numerous in every naval hospital. Little or nothing can generally be done for these people but survey them and transfer them, at great expense, perhaps across the Pacific Ocean from the Philippines to the Mendocino California Hospital for the Insane and frequently later from that hospital to the Government Hospital for the Insane, Washington, D. C., where they may be kept at Government expense for years or until they die.

The United States Civil Service Commission has for several years required a six months' probationary period of employment for all persons who enter the public service through the medium of the examinations of this commission. This is a convenient method of eliminating, at the expiration of their period of probation, those individuals who are unfit or undesirable. Considerably less than six months would have sufficed, in either one of the two enlistments of the landsman herein described, to convince not only him, but also the naval officers under whom he served, that the Navy was no place for him. But, in accordance with the terms of his enlistment, this psychopathic malingerer has over three years yet to be carried on the pay rolls of the Navy, and he is subject to pension for an indefinite period in

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case he should become disabled as the result of any act of duty or service in that time.

The fact that the Navy Department contracts to pension its personnel for disabilities or injuries incurred in the line of duty constitutes of itself, it seems to me, sufficient reason for requiring a period of probation from all recruits. Experience in the past has proven that a good many cases of incipient insanity, or tuberculosis, neurasthenia, hysteria, and epilepsy, which could not be diagnosed at the recruiting stations develop or become manifest within six months after enlistment. It is easy at this time to determine that these conditions existed prior to enlistment and are, therefore, not pensionable. But these diseases may not become sufficiently manifest to require medical survey or entry in any medical journal, and as the afflicted men are enlisted for four years, they may drift along in the service for two or three years until by and by their disease becomes so pronounced that they are put on the sick list, and a medical survey is called for. After an enlisted man has been two or three years in the service and has been repeatedly transferred from one widely separated ship or naval station to another, it frequently becomes very difficult for a board of three medical officers to determine whether the disease did or did not originate in the line of duty or is or is not incident to some act of service. The obtainable evidence is frequently very meagre, and they are not unlikely to give the afflicted man the benefit of the doubt and cause his case to be subject to pension by their official statement that it was incurred in line of duty, or incident to service, when, as a matter of fact, close medical observation of the man during a six months' probationary period would have revealed the truth that the disease clearly existed prior to enlistment.

It will be noticed that this patient has served one complete enlistment and one partial enlistment in the U. S. Army and two partial enlistments in the U. S. Navy. This fact clearly points out a gross defect in the naval system of enlistment. After an enlisted man has served an unsatisfactory portion of one enlistment in either the Army or the Navy, it should not be possible for him to reenlist in either service and remain therein. But I have repeatedly noticed, not only in this case, but in many others, that such reenlistments do occur. This state of affairs would seem to indicate the desirability of combining under one centralized head in Washington, D. C., those portions of the Army,

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Naval and Marine Corps Services which have to do with enlistment, so that when a would-be recruit has been rejected from either service for any cause, or an enlisted man has been discharged from either service for any cause, the remaining two services might have the benefit of that knowledge and profit by the experience. Thus the three services could be of mutual assistance to each other and the Government saved an incalculable amount of time and money by not enlisting individuals who have once been rejected by or discharged from any one of the three services. If the recruiting stations of the three services could be combined under one centralized head, it would not be possible, it seems to me, for an individual to vibrate, as it were, from one service to another and enlist twice in the same service, as did the young man herein described, who had once been discharged for inaptitude.

It will also be noticed that this patient has held a remarkably large number of positions for a young man of his age. This fact, it seems to me, should be a cause for rejection, in considering a candidate for enlistment, because it is clear evidence of instability, restlessness, and lack of continuity of thought. Our safest means of judging of the future is by the past, and it is unreasonable to suppose that a young man giving such a history of wandering as this young man gives will suddenly change his habits and be content to serve a four years' enlistment in the U. S. Navy without attempting to desert, purchasing his discharge, feigning insanity, or adopting some other method to enable him to leave the service.

Having ascertained that this man, by his own statement, feigned insanity, during a period of depression, for the purpose of getting out of the Navy and was committed with that diagnosis to the Government Hospital for the Insane, from which he has been discharged as "not insane," he having shown no symptoms of insanity while in the institution, the question arises, "Should he be court-martialed and punished for malingering?" I concur in the opinion of Dr. William A. White, Superintendent of the Government Hospital for the Insane, on this point, which has already been given, viz, that he should not be punished. I realize that, from the naval point of view, as a disciplinary measure, he is entitled to a trial by court-martial and, if found guilty, to punishment. It seems to me, however, to use his own words, that "a discharge for the good of the service" would be

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the best disposition of the case, and the discharge would have as much "therapeutic value" as a trial by court-martial and further imprisonment. He has already been pretty well punished by four months' confinement in this institution and leaves it with the stigma of having been confined in an insane asylum, and it is easy to foresee that his Wanderlust nature is almost sure to bring to him in future more than his share of troubles in his pursuit of his Will o' the Wisp, "a right environment."

There remain for consideration the two great questions: "What should be done with a man who suddenly begins to present symptoms of insanity?" and "How may malingering be detected?" A medical officer assumes a great responsibility in deciding upon these questions, and they are questions which not infrequently come to every medical officer for decision. Of course, if a man is clearly insane, and shows suicidal or homicidal tendencies, the usual method in the Navy is to place him in the brig or observation cell until he can be surveyed and transferred to an institution for the insane. Indeed it is about the only thing to do to insure safety for himself and others. A case of mania may frequently—in fact, generally—be quieted by enveloping the patient from head to foot in a hot or cold pack, and giving him a hypodermic injection of hyoscine hydro-bromate, grain 1-100th, which may be repeated in one-half hour if not effective.

But the problem presented by the case herein described is not so easy to solve. The fact that the man goes to a medical officer and confidently tells him of his intention to commit suicide because he is depressed and unhappy, and hinting that a transfer might be effective in curing him, should at once arouse in the mind of that medical officer a suspicion of possible malingering. This suspicion should be strengthened when the would-be suicide expresses a preference for a death which is not very painful, as in this case.

The time has now arrived to confine him in the observation cell or ward of a hospital if possible, as was done in this case. This confinement, it seems to me, should continue for a period of two or three weeks, or even longer. During this time he should be given daily exercise in the open air, and he should be carefully watched, particular note being made by the surgeon in charge as to how he reacts to stimuli, and the condition of his mental state. A complete examination should not be attempted at one time, because it will frequently happen that a patient of this kind will

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react differently to stimuli at different times, and these differences will eventually enable us to determine the patient's mental status. The patient, therefore, should be seen frequently, but at irregular intervals. It might be well to awaken him from sleep on one or two occasions, or give him an anesthetic, and see how he reacts to these sorts of stimuli. Is he emotional, and does he laugh or cry easily, and are the stimuli which produce these reactions sufficient to account for them in a normal individual of his education and experience, and in this patient before any question arose as to his mental condition? Does he take any interest in his surroundings? Is he excited or depressed? Is he sensitive to being watched, or does he think the is being watched or talked about when he is not? One should probe cautiously as to delusions, especially of persecution, and hallucinations of all kinds, especially auditory and visual hallucinations. Is he oriented? Does he respond promptly to questions, or is there retardation? What is the character of his perception, attention, reasoning and judgment. How does his manner now compare with his manner before any question arose as to his mental condition?

A careful attempt should be made to ascertain his family and personal history prior to his entry in the service, especially with reference to former attacks of insanity, epilepsy, hysteria or neurasthenia. A good history of the patient up to the time his mental condition changed will frequently throw much light upon his present condition, and materially aid in arriving at a diagnosis.

The fact that a man talks of committing suicide, kicks out a pane of glass, or walks into the ocean, or does something else equally absurd, for which no plausible explanation is given, is hardly sufficient evidence upon which to make a diagnosis of mental disorder. A month is not too long to keep such a patient under close observation before calling for a medical survey and transferring him to an institution for the insane. A malingerer will usually tire after awhile, and there will come a time when his care to preserve the integrity of his conception of a symptocomplex of insanity, or other condition which he may be feigning, will relax, and he will reveal his true character. This is especially true of a man who is afflicted with Wunderlust. Such an individual is lacking in continuity of thought, and sooner or later he is almost sure to be caught off guard, or he will voluntarily throw off his mask, having grown tired of malingering, just as he has grown tired of everything else.

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No medical officer likes to assume the responsibility of caring for a man who, there is reason to believe, may commit suicide. Nevertheless, it is a responsibility which any of us may be called upon to assume, and we should not be too anxious to shift it to someone else. Someone has to assume that responsibility, and we should accept our share of it. If we take all ordinary precautions to prevent such a man committing suicide, and it happens in spite of our best efforts, we can hardly be held to blame.

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A RECRUIT DEPOT POINT OF VIEW.

By Major P. C. Field, Medical Corps, U. S. Army.

IN the hope that we may gain the attention of some sympathetic readers who may be interested in the details of the present system of obtaining suitable recruits for the United States Army, we offer this simple recital of our doings and desires. It is possible that some may not fully realize the constant effort made to prevent undesirable recruits being supplied to regiments from recruit depots.

First, let it be understood clearly, that the only reason for the existence of a recruit depot is the daily (including Sundays and holidays) examination and enlistment by medical officers of "applicants for enlistment." The transportation from distant places, the reception of and subsequent instruction and drill of these raw recruits, though exasperating in its constant repetition and detail, is entirely annulled and time and money wasted if one medical officer or hospital corps clerk forgets one of the numerous orders or War Department decisions affecting the physical examination, the preparation of the enlistment papers and final acceptability of the individual applicant. Yet we are human and will occasionally lapse in the daily grind of enlisting, resulting in a quick and sudden, if not rude, awakening when some one, ever vigilant, carries out the intricate check system existing at this depot.

Hence, if we must stand ready to enlist 5 or 55 applicants or reexamine 5 or 255 outgoing (departure to posts) recruits, plus examination of and revaccination of 5 or 105 others on the one and same day, without extra help with the larger numbers, and without increasing the risk of the above-mentioned awakening, we must be specialists in this particular line of work and have a working knowledge of all the specialities. It must, therefore, be evident that medical officers, to be successful at these depots must be able to do with equal facility and success either a herniotomy or an iridectomy, a rhinoscopic or cystoscopic examination, to see the macula or the uncus and be sure that he does not see something which is not there, and recognize a vestibular

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nystagmus as he would an old friend. He must decide within a 24 hour limit whether a sound in the cardiac region within the "area of romance" is functional or organic and he must do it so well that this man's future commanding officer will not be sending him back to a recruit depot as an S. C. D. case requiring an expression of opinion of an S. C D. board as to whether this "medico" was blamable or not. The system calls for an examination of every applicant by three medical officers at enlistment, and by two at outgoing examination if he has any mental or physical defect which the original examiner thinks might be a sufficient cause for rejection or develop, under peculiar conditions of service, to cause disability. Such men have searching examinations made by the doctors with special knowledge of the particular part of body involved, with a final decision by the senior recruiting officer, based upon written reports from his assistants. Such complete reports are made upon each man's "Recruit Card" and are buried in files at these depots and would be so valuable to surgeons of posts in future treatment of each man, that we would be tempted to recommend, that with each outgoing recruit a copy of his "Recruit Card" be forwarded, if it were not for the fact that this extra clerical work cannot be handled.

Remember tnat the applicant without some defect is a curiosity and to reject all men with defects would stop recruiting and the more thorough the search the more defects found and more time consumed. Much time and necessarily patient but exasperating effort to determine the mental capacity and education of foreign-born applicants is daily expended by at least two medical officers who have to reject a large proportion of those accepted and forwarded to this depot.

That you may understand again that the only reason for the existence of recruit depots is the final acceptance of desirable recruits, suppose we follow a recruit through his 30 to 35 day stay at this depot. After enlistment he draws clothes, then is assigned to a recruit company and put under a squad leader who holds his position only because he represents the result of the application of the law of "the survival of the fittest." This noncommissioned squad leader, under the supervision of the company officers, is held rigidly responsible for the personal cleanliness, appearance, conduct and detail instruction of each individual in his squad of 12. A recruit can go nowhere on this post, except when he is off duty, unless he is accompanied by a noncommissioned

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officer. Normally, he is next seen by a medical officer at the end of his first week, when he is examined for the result of his vaccination at the recruiting station. He is lectured on each Monday by a medical officer regarding venereal disease. He drills every A. M., except Saturday and Sunday; he has an athletic drill each P. M., during which time he must keep in motion and is tried out for any special athletic ability. He is marched with his company to attend any contest in which his company representatives compete and which includes baseball in season, soccer football and basket ball or the monthly boxing or wrestling contests or field day athletic events. He strives for places on his company teams or rejoices in a temporary place on the post baseball or rugby football teams. He is conducted to the dental surgeon's office if "Dental treatment needed" is stamped upon his "Recruit Card," and he bathes, cleans his teeth and "shines" his shoes at stated times and with proper supervision. He is marched to the hospital at 2.00 P. M., Tuesday and Friday for observation or treatment of any eye, ear, nose or throat defect which he had at enlistment or subsequently obtains, likewise on other days for defects of other parts of his anatomy. On the 14th day, he again sees a medical officer for the final result of his vaccinations. Six evenings each week he is entertained at the drill hall by moving picture shows, vaudeville entertainments, roller skating and basket ball contests. He can not get off the post on pass except for very urgent reasons.

He certainly is kept busy and the improvement in personal appearance of the great majority is wonderful.

And yet all this drill and instruction is only incidentally accomplished while each individual recruit is being constantly watched for the development of any mental or physical defect which might disable him after he is sent to a regiment. If any defect is even suspected, it is investigated by the company officers, who send the man, with full written reports of officers and squad leaders, to the Surgeon who admits the man to the hospital. The ward surgeon observes and examines him for one week on an average and reports his findings. If the defect or disability disappears in hospital, the recruit is returned to his company for further trial and report, but if he has developed a defect not curable he is immediately put before the S. C. D. board and discharged for disability. If the recruit develops no defects, he is normally seen for the 4th time, within a month, by a medical

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officer at his outgoing examination, but only after the weekly reports of his squad leader show him to be properly trained and physically fit. But should he be a "hold up" at his original enlistment examination because he has some questionable defect, he is sure to be a "hold up" at his outgoing examination, hence he is examined four more times by different medical officers after being passed by his company officers. Finally, as per regulations, he is inspected by the commanding officer and the surgeon at his departure from the depot.

When the number of applicants arriving during one month approximates 1,000, with the same number departing to posts, the reader may understand why we believe we work at a recruit depot.

But what of the $16.00 a month hospital corps enlisting clerks working from 6.30 A. M., late to dinner at 12, at work again at 1.00 P. M., and until 5.30 or 9.30 P. M., according to the number of recruits or the number of clerical errors found which require entirely new papers? These men work every day without extra-duty pay, with no rest on Sundays or holidays, with no one who can take their places for an occasional pass for 36 hours, and doing work more exacting and just as expensive, when blundering, as any post exchange or staff department, where well salaried civilian clerks are supplied to do the technical work and are allowed a decent period of vacation once a year. As we medical officers work with these enlisting clerks, we see them become neurasthenic and so irritable from the daily rush, incessant nervous strain and concentration that they present only too often beginning symptoms of psychasthenia, and when the occasional pass comes, resort to intemperate pleasures, unfitting them still more for this special work. But a good wardmaster or pharmacist or cook cannot fill the vacancy when such a clerk has to be removed or is absent, for it takes a month, at least, for a new man to learn the system and during that time he exasperates every one by his inevitable errors and "drives to drink" that much faster the good man who has to suffer because the number of hospital corps men allowed makes it impossible to have another set of clerks to do the checking and correcting of papers and other final details of each day's enlistments.

The hospital corps men now at recruiting stations can be of much more service at recruit depots and larger posts. Let the vaccinations which they do at the stations be done at the depots

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and let the certificates of protection against smallpox of the depot surgeon be acceped everywhere in the service, based upon two unsuccessful (protected) or one successful vaccination and stop the injustice to the recruit of vaccinating him every time he changes station within two years. The time will soon come when antityphoid vaccination will also be accomplished at the depots, requiring considerable extra work and time, and certainly these triple injections will not be repeated everywhere. Let there be more uniformity in vaccinations and there will be less resistance and complaint from the enlisted man. Our sympathy is with the applicant, when we view the rather frequent excoriations and abrasions on applicants passing as vaccinations and preventive of successful inoculation. Increasing the standard and centering work upon recruit depots means more uniformity and we believe better results, but such centralization means that the number of medical officers, hospital corps men, and allowance of medical supplies will have to be increased. There is a limit of endurance beyond which no one can be forced and do his best work.

Believe us then, you surgeons of posts who have sent to this S. C. D. board at this depot certain patients with a view to discharge for disability, that we receive them in a most humble and chastened spirit, but true to our training here, if we examine them inside and out and discover something that you may have missed, we do not exult and forget that we have been, and hope to be again, surgeons of posts like yourselves. We have been supplied with all the necessary apparatus and instruments to do special work and if we succeed in removing the cause of the disability, we necessarily must report said patient ready to return to duty, even if the man may not be cured of his general worthlessness, the latter not being a cause for a disability discharge, so far as we understand the order under which we act.

If you would have us do better, give us a more comprehensive history, tell us what blood tests have been done and results, what treatment tried and failed, etc., so that, for example, if you have had two negative Wasserman tests, we would not waste our own or others' time in repeating the tests. You can help yourself and us, if, in every S. C. D. case, you thoroughly eradicate any luetic taint before concluding that the patient is incurable. Our most frequent reason for changing your transfer diagnosis in because a positive Wasserman from the Washington laboratory causes appropriate treatment and a prompt disappearance of disabling

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symptoms. Clinicians are being surprised in these days of Wassermann tests that latent syphilis is shown to be so much more prevalent than formerly believed. We recruiting officers here at Slocum are now of the belief that about 50% of white and 90% of black applicants would prove to be syphilitics. For example—we have evidence that about 50% of perforated nasal septum cases, even with a history of trauma or irritating dust occupations, are luetic in etiology; that boys with teeth suggestive of rickets in childhod (not Hutchinson's), with evident nervous temperament, slight general glandular enlargement (very common in applicants at this depot) and some apparent thickening of radial arteries are in large proportion congenital syphilitics. Our recent experience has been that a large proportion of recurrent superficial ulcerative keratitis cases, suggestive of phlyctenular keratitis, give a postive Wassermann and are permanently cured by "606."

I am at present entertaining the belief that applicants with marked follicular conjunctivitis, or as others call them, true trachoma cases, who, after the "expression" operation require considerable treatment with caustics to prevent relapse, will give a positive luetic reaction and are permanently cured by salvarsan without post-operative caustic treatment. An ocular fundus examination showing any evidence of a former or present choroidoretinitis will almost always prove luetic at this depot.

So many of the Insanity S. C. D. cases sent us have given the positive luetic test and markedly improved under treatment that, I, as a member of the present board, "have to be shown" before I am willing to vote for insanity as a diagnosis. Since January 1, 1911, we have had a Wassermann on every S. C. D. patient sent here and the record of positive reactions is to date 46.1%. So great is the demand for "606" that the post exchange, being an up-to-date establishment, has a supply for sale to enlisted men and injection by the medical officers.

Regarding the large amount of clinical material passing through this depot, and necessarily uninvestigated, we have noted the following:

The Eye.—That small anterior synechia, traumatic in origin, are bad risks because of recurrent pain, and posterior synechia are most often of luetic origin.

That manifest or even moderate latent squint is to be considered as of equal importance with refractive errors, because these

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men too often need correcting lenses when given clerical work and fail in athletic sports requiring skill and sharp binocular vision, since they lack binocular fusion. It is a small part of their enlistment during which they will close one eye to shoot, even if monocular vision is above normal.

That bright and even illumination of the test types for visual acuity saves to the service many good men who would otherwise fall below the requirements, and changeable type prevents the occasional fraud of learning similar test type at recruiting stations or posts.

The Nose.—We are paying more attention to the markedly deflected nasal septums which interfere with nasal respiration and endanger the corresponding ear. "Submucous resection," under cocaine anaesthesia, has become common here and is one of the few operations the beneficial results of which is plainly evident to the enlisted man.

We have learned to believe that nasal polypi too often mean chronic sinusitis and we operate first and enlist afterward if the sinuses appear free. On the other hand, atrophic rhinitis with both nares filled with purulent crusts and ulceration only superficial and no true ozena, are accepted and with surprising quickness are cured by massage of the mucous membrane with Mandel's solution plus the invigorating exercise of the man's training. Such turbinectomies as are necessary are done with the scissors and cold snare method.

The Throat.—The adenoids and tonsils needing operation overwhelm us and only the worst cases are operated upon. Applicants with innocent loking healed perforations of the soft palate are usually syphilitics and give a postive Wassermann.

The Ear.—The "watch test" for hearing should be abandoned as a test in the Army, because it is only a high tone test and useless for a standard test, unless "standard watches" are furnished wherever tests are made. The spoken (conversational) voice and "residual whisper" at 20 feet are now standard and more uniform. Failure to use at least the Weber, Rinne and absolute bone conduction tests mean many a wrong statement as a cause for rejection or the acceptance of a future S. C. D. case.

That middle ear disease in one ear, if pus has necrotic odor, persisting after one cleaning of the ear, should be a cause for rejection and a double otitis media, chronic purulent residual with or without evidence of necrosis of bone should always be rejected.

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The Mouth.—Most of us are too busy with other more interesting subjects to think seriously on the subject of "oral sepsis." If a medical recruiting officer enlisted a man with as many small bone abscessess in the large bones of the body as he does with about every 3d applicant with decayed teeth (caries, with dento-alveolar abscess) he would either be tried for neglect of duty or considered a fit case to put before a retiring board for consideration of his mental incapacity. To be sure, the government decides, that it assumes no responsibility provided there are four opposing double teeth, two above and two below, but the government assumes, quite unintentionally, responsibility for the complications resulting from at least 75% of alveolar abscesses (meaning limited bone necrosis) in all the decayed teeth accepted with the applicant and if these teeth, when useless, are not extracted before departure from recruit depots, you are neglecting a most important preparation of the recruit for continued fitness for service at posts. If you believe the dental surgeon is a prejudiced observer, then ask the orist among civilian physicians and he will surprise you with his proofs of gastro-intestinal irritation and poisoning and entrance of infecting germs to the general circulation. The mouth and teeth should not be the one and only part of the applicant now neglected at depots and ways and means should be found for proper treatment. In an effort to improve this condition at this depot the one dental surgeon has extracted during the past two months 347 teeth and treated 413 others, leaving many untreated from lack of time and personnel. Two dental surgeons could make an impression upon the bulk of accumulated cases, but the one dental surgeon allowed makes only a dent. Yet every sanitary officer knows that if he gets the company ice-box and the company mouths, both at the same time, in a sanitary condition, the tropical diarrhoea, cramps and indigestion cease (parasitic disease excepted). Observant dental surgeons will tell you that pyorrhoea alveolaris has increased among officers and enlisted men since Philippine Island service began and it is not an infrequent cause for rejection at this depot.

In the Journal of the Royal Army Medical Corps, January, 1911, is an article entitled "Medical History of the South African war," by Lt. Col. R. J. S. Simpson, C. M. G. R. A. M. C., from which we quote as follows:

"Caries of the teeth and its accompaniments, including pyorr-

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hoea alveolaris, was much more important than is shown by the admissions to hospital. It is a very serious matter in relation to inefficiency, and is one of several things for which the only remedy is preparation during peace. There is among men with the colors not only a considerable prevalence of dental caries, but a septic condition of the mouth is almost more common.

"Much can be done by training the men to use a tooth-brush regularly, and the dental treatment now available is not only highly appreciated by the men, but decidedly effective in improving their condition. Observation leads to the conclusion that in the long run it will not pay to admit of much relaxation in the conditions affecting the dental efficiency of the recruit.

"Of 6,942 admissions for caries, etc., to hospital, about one-third were invalided to England, the remaining two-thirds were nominally returned to duty, but many of them were unfit for duty in the field and had to be retained within reach of soft food."

Hernia.—With no intention of irritating those who disagree, we report that we are constantly accumulating evidence to support our previous contention that indirect inguinal hernia among enlisted men, is with rare exceptions, due to a persisting funicular process and therefore dating from birth.

That the loop of gut enters and escapes from this open sack without the man being at all conscious of it, is seen here almost every week and of the numerous herniotomies done here during the past 12 months and the 12 rejections for hernia not one has been of the "traumatic" variety or where the hernial protrusion was coincident with any pain or other symptoms common with traumatism to the inguinal canal.

It must be evident after this recital, that recruit depots call for a general hospital working force and equipment and the thoroughness of our work and corresponding fitness of the recruit will always depend upon just these elements of personnel, equipment and sufficiency of supplies. A total of 124 operations upon eyes, ear, nose and throat alone, during the past year, plus the innumerable refractions from this and neighboring posts and refilling of prescriptions for lenses coming even from the Philppine Islands and Alaska gives you an idea of this line of work. If to this we add the constant major operative work necessary, with minor surgical dressings running from 650 to 700 a month, a sick report varying 6% to 8% in a post varying from 1,300 to 1,500 with a hospital of 120 beds with 337 completed cases last

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month and the body of recruits changing about every 4 or 5 weeks, thus bringing us a constant new supply of diseased conditions and last and not least, the 161 S. C. D. cases for the year, with their chronic and obscure diseases, it may be possible for you to understand that, with an average of 3.9 medical officers present for duty, we find it difficult to get one hour's daily exercise as per War Department orders. Being optimistic, we still cling to the hope that recruit depots will some time soon be given a special allowance of medical officers, of hospital corps men and general medical and surgical supplies proportionate to the number of enlistments and the number of S. C. D cases handled, remembering that a post of 1,500 raw recruits of one month's service will inevitably have a sick report much larger than other posts of equal size containing seasoned men of considerable service and which do not receive, each month, from 918 to 995 applicants for enlistment, as for the past two months has this depot.

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THE MASQUERADER, SYPHILIS—SOME STATISTICS FROM HOSPITAL PRACTICE.*

By Captain Harold Wellington Jones, Medical Corps, U. S. Army.

THE following brief paper is offered as food for thought, without apologies, to the medical officers of the Military Services. A short time ago the writer became interested enough to consult the records of the Walter Reed General Hospital with a view to ascertaining the number of cases of syphilis admitted under assumed names, or to put it more bluntly, under faulty diagnoses. The figures obtained seemed of sufficient interest for publication, and are given below, together with descriptions, in brief, of the cases.

From the time the Walter Reed General Hospital was opened in May, 1909, up to October 12th of the present year there were admitted 800 cases, and as might be expected, this being a general hospital, these represented a great variety of medical and surgical ailments, both acute and chronic. The hospital draws its patients from Army posts throughout the Eastern and Southern parts of the United States and receives some patients from as far West as Wyoming, in addition to being the post hospital for Washington Barracks and Co. C, Hospital Corps, stationed at Takoma. Of these 800 cases, 30 were admitted with the definite diagnosis of syphilis, 26 of these being primary or secondary and 4 tertiary, making altogether 3.6% of the total admissions. Twenty-five cases, under various diagnoses, were admitted for treatment, all of whom were affected with syphilis, beyond question, and these represnted 3.12% of all admissions, nearly as many cases wrongly diagnosed as were correctly diagnosed.

The total admission rate for syphilis was therefore about 6.72%, nearly 7%, large enough perhaps, to take notice of, but having no great significance as indicating the percentage of syphilitics in the military service. The point of greatest importance, it seems to me, is the astonishingly large number of admissions for diseases which proved to be nothing but ordinary or "garden" varieties of syphilis, and which should have been diagnosed as such, in the great majority of instances. Is this because the younger generation of physicians is less skilled in the diagnosis of lues than the one which is passing, or is it just plain carelessness or looseness in diagnosis?

*Read by title at the 19th Annual Meeting.

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Following is the list of cases:

Case. No.	Diagnosis on Transfer.	Corrected Diagnosis.	Wasserman Reaction.
88	Undetermined.	Syphilis, secondary, eruption, mucous patches, etc.	None.
116	Undetermined.	Syphilis, eruption, mucous patches, scar on penis.	None.
120	Undetermined.	Syphilis, secondary, adenitis, condylomata.	None.
276	Gonorrhoea and chancroids.	Syphilis, secondary eruption.	None.
277	Tonsillitis, acute follicular.	Syphilis, secondary, patches on tonsils and tongue.	None.
292	Bubo, chancroidal, suppurative.	Syphilis, adenitis, secondary eruption.	None.
311	Orchitis, gonorrhoeal.	Syphilitic orchitis.	None.
313	Necrosis, frontal bone, outer table.	Syphilis, tertiary.	Pos.
335	Lateral sclerosos.	Tabes, syphilitic origin.	Pos.
355	Chancroid.	Syphilis, primary.	None.
369	Orchitis, bilateral cause unknown.	Syphilitic orchitis, bilateral.	Pos.
445	Chancroids.	Syphilis, primary.	Pos.
481	Mucous colitis.	Syphilitic stricture, rectum.	Pos.
547	Chancroids, multiple.	Syphilis, primary.	Pos.
566	Under observation as to sanity.	Syphilis, cerebral.	Pos.
581	Under observation as to sanity.	Syphilis, secondary.	Pos.
643	Ulcer, anal, cause unknown.	Syphilitic ulcer about anus.	Pos.
662	Gonorrhoea, acute.	Syphilis, secondary, eruption.	Pos.
678	Adenitis, chronic, tubercular, cervical region.	Syphilis, tertiary, gummata of cervical region.	Pos.
681	Endo-carditis, neuritis.	Syphilis, probably tertiary, mediastumum.	Pos.
698	Appendicitis, acute.	Appendicitis; syphilis, tertiary, gumma chest wall.	Pos.
702	Cephalalgia, undetermined origin.	Syphilis, cerebral.	Pos.
721	Fever, undetermined origin.	Syphilis, secondary.	Pos.
724	Chancroid.	Syphilis, primary.	Pos.
738	Pruritus ani, chronic.	Syphilis, secondary.	Pos.

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Case No.	Results of Specific Treatment.	Length of Time Under Treatment.	Remarks.
88	To duty. Improved. To continue treatment	1 month.	
116	Do.	7 weeks.	
120	Do.	3 weeks.	
276	Do.	2 months.	
277	Do.	6 weeks.	
292	Do.	3 weeks.	
311	Do.	1 month.	
313	Nearly well. Still under treatment.	11 months.	Operation outer table of skull.
335	No improvement.		Discharged the service for disability.
355	To duty. Improved.	3½ months.	
369	Do.	2 weeks.	
445	Improved.	4 months.	Dishonorably discharged by court martial.
481	Slightly improved.	6 weeks.	Discharged the service for disability.
547	Improved.	6 weeks.	
566	Well.	4 months.	Treated at Gov't Hospital, after transfer.
581	Improved.	2 months.	
643	Much improved. Still under treatment.	4 months.	
662	Duty. Improved.	5 weeks.	
678	To duty. Practically well.	2½ months.	Gummata removed at operation.
681	Worse up to the time specific treatment begun. Then great improvement in 3 weeks.	2½ months.	
698	Gumma reduced 2-3 when returned to duty.	6 weeks.	Operation appendicitis, appendix possibly syphilitic; not examined microscopically.
702	To duty. Improved.	2 weeks.	
721	To duty. Improved.	5 weeks.	
724	Improved. Still under treatment.	2 months.	
		6 weeks.	
738	Nearly well. Still under treatment.		

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In addition, it may be mentioned that a positive or suspicious Wasserman reaction was obtained in a case transferred as tuberculosis arthritis of the hip joint, which did not improve under specific treatment, and was therefore not included in the series; in a case of cancer of the stomach, which received specific treatment as a vain hope, since the disease was inoperable; and in a case of valvular heart disease, with purpura, which is still receiving specific treatment without improvement, thus far.

In conclusion, I think I am justified in remarking that the diagnosis of syphilis in its various stages is like the diagnosis of myxedema—easy, if you think of it, and since we have ample opportunity in our service, of confirmation by the Wasserman reaction, a word to the wise should be sufficient.

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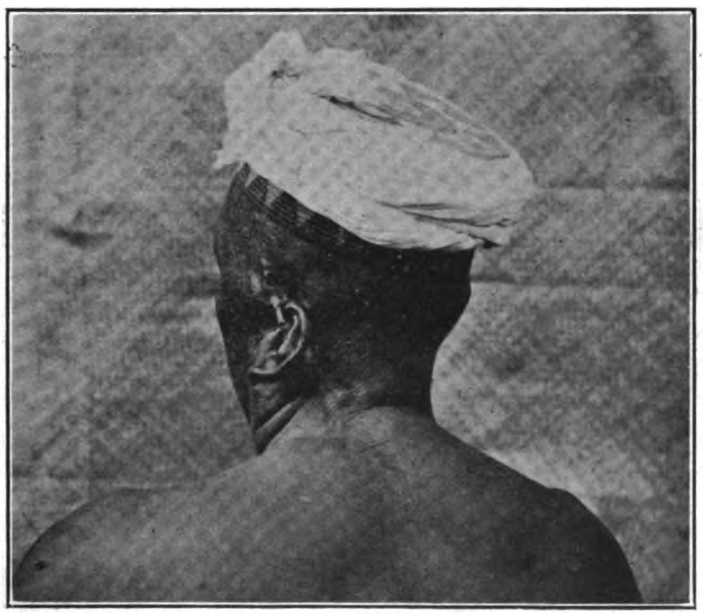
AN INSTANCE OF MORO SURGERY.

By Captain W. R. Eastman, Medical Corps, U. S. Army.

DATU INNK is one of the big Moros of the Cotabato Valley, a pundita, or priest, as well as a headman, he has over a thousand followers and exerts a wide influence among his people, controlling one of the most fertile districts, the Buluan country, in that vast valley. He is also one of the best friends the Americans have in that country. During the Ali campaign he was Captain McCoy's guide on the expedition from Digas, Davao to Malala, when Datu Ali was killed.



DATU INNK.

In the Spring of 1910, while stationed at Cotabato, I made the trip to Buluan with the governor of the district, and we put up several days at Innk's house, while there I noticed a peculiar deformity on the left side of his neck, and, being interested, persuaded him to pose for several photos and to tell me the story of this ugly scar.

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It seems that in 1894, in the days of the Spanish rule, the Lake Lanao Moros were stealing cattle from the Moros around Cotabato, especially from Datu Mastura, one of the powerful friends of the Spaniards. The Spanish governor sent Datu Ali, with three hundred men, and Innk as his lieutenant, into the Buldun country with orders to kill all Moros caught with stolen cattle or suspected of having stolen them. Hearing of a house in which suspects were supposed to be lodged, Innk was sent, with four or five men, to make inquiries. There were eight men and three women in the shack, and their reply to his questions was a concerted rush upon him Several men singled him out and one, with a heavy campalon, struck from behind intending to split open his skull, but merely slashed the side of his head, cutting off his left ear and considerable of the surrounding tissue, which fell down on his shoulder, remaining attached by a wide piece

DATU INNK AND PART OF FAMILY.

of skin. In the meantime, all his followers having deserted him, except his younger brother, and his muzzle loader having missed fire at the first rush, he swung the gun as a club until it was smashed, then grabbed a heavy spear and used it so effectively that five of the men and two of the women were killed, and the remainder put to flight.

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After the fight was over Innk placed the ear against the raw surface on the side of his neck and bound it in position with his head cloth, and several days later, upon their return to Cotabato, it was dressed by the Spanish doctor. Naturally the wound was badly infected and required more than two months to heal. Then it was found that the opening in the external ear was more than two inches below and posterior to the external auditory meatus, and the latter was covered with a film of ear tissue so that hearing was decidedly interfered with, and a constant rumbling on that side caused great annoyance. Finally, he pushed a stick through the tissue covering the meatus and later inserted a short bamboo tube, which he wears to this day (perhaps not the identical piece of bamboo) and can hear equally as well on the left side as on the right.

He told me that several years ago Dr. Saleby saw him and was very anxious to perform a plastic operation to restore his ear to the normal position, but Innk said he was afraid the medico might place a horse's ear in place of his and refused the operation.

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THE DISPOSAL OF THE EXCREMENT OF TROOPS WHILE ON THE MARCH OR IN BIVOUACS OF SHORT DURATION.

By Isaac W. Brewer, First Lieutenant, Medical Reserve Corps, U. S. Army.

THE disposal of the excrement of armies has been studied by many able sanitarians, and the literature of the subject is so great that it might be called burdensome. However, most of those who have written upon the subject have considered only the conditions that obtain in camps, neglecting the very important question of soil pollution by troops that are in motion or at rest for short periods of time.

My attention was first drawn to this question while serving in Arizona. At that time a portion of the garrison made a practice march every week, and it was my fortune to accompany the troops quite frequently. In the arid region good camping places are not very common and we soon got into the habit of camping at certain places where there was water, wood and shade. The halts were usually made at the same places week after week, and it became apparent that in any other climate these localities would soon have become badly polluted. The same condition has been observed from time to time in other places, but more particularly during the recent maneuvers in the vicinity of Subig Bay, P. I. There the "hostile armies" were separated by a mountain range, through which there were but few trails. The "Red Army" had to concentrate by two trails, and at some points the ground began to be polluted by the excreta of the passing troops. One morning the organization to which I was attached occupied a position that had been the bivouac of a portion of the opposing army during the previous night. The ground in that vicinity was so badly polluted by fresh feces that it was impossible to picket out our horses.

The British Army had this same experience in South Africa. A board of officers of which Colonel Travor was head says: "Towards the end of the summer, water became scarcer, and the

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choice of camping grounds more restricted, consequently the same ground was repeatedly occupied and the surroundings became more and more contaminated. Diseased and exhausted animals invariably make for water, and not having strength left to extract themselves from the mud, lie down and die, and where the banks of the spruit are steep the mortality is very great. The Moder River in particular was full of carcasses of animals. Another great cause of contamination is the natural inclination of human beings, both black and white, to seek seclusion while defecating, and as South Africa is an open treeless country, the spruit offered the most convenient cover. The consequence was that when it rained, all the filth was washed down into the deep, stagnant pools, which contained a concentrated solution when the water ceased to flow at the end of the dry season. It was from these pools our drinking water was drawn, so it is little wonder that at this season of the year enteric fever broke out."

Unless great care is taken similar pollution will occur wherever an army has to concentrate or move over a few roads or trails. In our army it is the custom to camp where there is water, wood, grass, and if possible, shade, and as the marches begin at about the same time, and the halts are made at about the same intervals, the same bivouacs and halting places will be occupied in turn by each body of troops going to the front. Where the camp is for but one night some commanders do not make provision for the disposal of the feces and in the morning leave their camp surrounded by a cordon of feces in which flies luxuriate until the arrival of the next command, when they transfer the germs of the feces to any food left exposed. In this way typhoid fever and other diseases are disseminated throughout the army.

This can, however, be prevented without much trouble, by adopting a method that is very old. In these days of novelties we are prone to consider anything that is old as worthless, but at the beginning of the Twentieth Century we have devised no better system for the disposal of the feces of moving bodies of troops than the one that Moses devised for the Children of Israel during their great march from Egypt to Palestine. He said: "Now thou shalt have a paddle upon thy weapon; and it shall be, when thou wilt ease thyself abroad, thou shall dig therewith, and shall turn back and cover that which cometh from thee."

We should teach our men that the safest place for their excrement is under five or more inches of earth, and during manoeu-

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vers, and field exercises and while on practice marches see that they cover over their excrement.

In sandy soil or loam the necessary excavation can be made with the foot and a simple movement of the foot will cover it over. Where the ground is harder the intrenching tools, which are carried by each squad, can be used, or for men who are not so provided the bayonet will serve as a digging instrument. The entire operation will consume but a few seconds. It is a very simple matter to cover with earth the spot soiled by urine. I have followed this method while on practice marches and have never found it to be impossible to turn the earth.

If we instruct our soldiers in this matter and get them to fully appreciate that these simple measures are for the protection of their health there will be less sickness in our camps. Without the cooperation of the enlisted men we can not prevent soil pollution.

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FILARIASIS AT FORT HANCOCK, NEW JERSEY.

By 1st Lieut. Howard A. Knox, Medical Corps, U. S. Army.

R. H. the seven year old daughter of Sergeant H., of a coast artillery company stationed at this post, came to the writer for treatment on October 21st of this year. Objectively the child was pale and somewhat anemic in appearance and not well nourished. The pulse was, at the time (2.30 P. M.) somewhat irregular, but all signs of cardiac symptoms were lacking. The temperature by mouth was 101.5° and there had been diarrhoea for two weeks and previously, at irregular periods. There were alternating periods of diarrhoea and constipation. The inguinal glands were much enlarged on both sides and the history showed that these had been increasing in size for about 8 months.

This child had lived at a post in Florida previous to about a year ago. The father said that another male child had had swollen inguinal glands also, which had been removed in a Boston hospital and that "a bunch of worms" was found in one of them. These facts were considered significant. Routine examination of stools was done with negative results and the differential blood count showed an eosinophilia of 19%; this count was made at 3 P. M.; another was made later at 9 P. M. of the same day and the eosinophilia was only 11.5%. It was at the later examination that numerous nematodes were seen in the blood specimens, which were later found out to be microfilaria or embryo filaria nocturna. The urine was normal, no chyluria being present.

Fresh specimens of blood were examined at night and the microfilaria were seen, lashing about among the red corpuscles, coiling and uncoiling, but no progressive motion was seen. With the oil immersion lens the transparent hyaline sheath of the embryo was seen. The tail was sharp and the head blunt, with a six-lipped prepuce and a protruding spine.

The fever and emaciation of the child were probably not directly due to the parasitosis; in view of the limited demonstrable lymphoid involvement, it was probably not a true elephantoid fever; it is a well known fact, however, that people harboring parasites have exaggerated symptoms from minor af-

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fections. The child had a mild grade pharyngitis when first seen, which probably, under normal conditions, would have caused no fever or malaise. A chronic inflammation of the lymphatics could have caused these symptoms.

It is a noteworthy fact that when the enlarged glands, which gave rise to some pain, discomfort and anxiety, were removed the temperature came to normal and has not been above since the operation, which was ten days ago. Examination of the blood will be made at regular intervals for the next few months, and if there are no adult filaria anywhere else than in the inguinals, the micro-filaria should disappear.

This child was probably bitten by the culex fatigans or some anopheles mosquito while in Florida.

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Reprints and Translations.

FATIGUE IN MILITARY LIFE.

[*From La Fatica Nella Vita Militare, Rome,* 1908.]

Translated by Lieut. H. R. Smalley, 14th Cavalry.

CHAPTER III.

INFLUENCE OF FATIGUE ON HIGHER PSCHYIC LIFE.

To better estimate the effect of fatigue on the complex function of the intellect, it will be well to make certain divisions and make observations separately on the attention, the memory, the imagination and other elements.

(1) INFLUENCE OF FATIGUE ON THE ATTENTION.

That slight state of excitement necessary to the brain for it to better perform its functions and retain more lasting images of things, if affected by the influence of fatigue. It can be said that the entire organism takes part in preparing the conditions for the most active cerebrations: the materiality of the organic process on which attention depends, accompanies the pschyic activity throughout its duration. When we labor mentally there is an increase in tone in the muscles of the body; a myograph applied to a muscle of a person who is studying, will show a sensible muscular tension; the word "attention" is only the translation of the physiological fact, "tension of the organism," and of the striated muscles in particular. If we hold up some weight with the arm extended, there follows in our muscles a series of phenomena that resembles, if we make allowance for their different nature, what we observe during an effort of the brain: at first it seems that the muscular contraction costs us no fatigue, but after a while we feel it increase rapidly; the arm trembles and

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then falls. Any one who has given it any attention has found that after a long march or severe muscular exercise, we feel less inclined to study. The incapacity for mental application due to fatigue is very noticeable in climbing the Alps. Saussure on Mont Blanc found himself incapable of the smallest intellectual task. "When I took any pains with anything," he writes, "or fixed my attention on anything for a few moments at a time, I had to rest and gasp for breath for two or three minutes." Mosso in describing his studies made on Mt. Rosa, refers to the enormous expenditure of nervous energy entailed by the more difficult places which almost brought about a state of unconsciousness, the not infrequent cause of Alpine disasters. Cogni, in describing his expedition to the North Pole, writes: "When a danger is encountered it seems that all, men and dogs, arouse themselves and that their former energy returns at once."

Great muscular fatigue takes away all aptitude for attention; the researches of Chattel, of Bettman, of Feré, of Welch, of Moore, of Pillsburg, show that muscular exhaustion diminishes the faculty of attention. Zuntz and Schumburg in their observations, which we have already referred to, on the physiology of the march, have calculated in hundredths of a second the time of perception of a given stimulus on the hand or forehead or both, and have found in general a more tardy perception in fatigued subjects. It is known that there is close relation between the power of attention and the celerity of that pschyic act called "time of reaction," "physiological time," or the chronological interval between the excitation of a sense and the instant in which the subject under experiment makes a voluntary signal that he has perceived it. To the arithmetical quantity that represents the personal equation Buccola has applied the term "dynamometer of attention."

In psychological semiotics the time of reaction is calculated by means of the Hipp chronoscope which measures time to the thousandth part of a second. In describing the working of this apparatus, it is sufficient to say that it is constructed like a clock and can be started or stopped by means of a catch worked by two strings; pulling the first starts the machinery; pulling the other stops it. There are two dials, one above the other; the lower records tenths of seconds; the upper hundredths of tenths, that is thousandths of a second. By means of an anchor connected with two electro-magnets the hands on each dial are left

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free to follow the general movement of the wheels, or they are held fast while the general movement is conducted thus: At the instant the circut is closed an external excitation is produced (the ringing of an electric bell, or the illuminating of a Geissler's tube), the hands of the clock rotate at enormous speed; the instant the subject perceives the phenomenon of sound or light, he touches a telegraph key, breaks the circuit and the hands are instantly arrested. The space traversed by the hands measures the time between the instant of excitation and the voluntary signal that the phenomenon has been perceived: in other words it indicates the "time of reaction." Buccola has shown that, while an individual in normal condition shows a "time of reaction" of 150 thousandths of a second, on repeating the experiment after the same subject has made a long march or was otherwise fatigued, the "time of reaction" was from 190 to 220.

For such observations we can use the graphic method proposed by Patrizi, with which attention is studied in a manner similar to that used to register the curve of fatigue of the muscles. Subjecting an individual to a series of stimuli, each followed by a brief pause, he begins to concentrate his attention to a high degree and to signal promptly by a pen a writing on a smoked cylinder rotating at a high velocity is lowered the same instant that a simulus of some kind (electricity, light or sound) is administered to the subject under observation: a key, which is pressed by the subject as soon as he perceives the stimulus, interrupts the current and makes the pen rise with an upward break in the line. The linear space between the two breaks is measured in time by means of a bristle attached to a branch of a diapason, writing on the same cylinder, the oscillation of the diapason in unit of time being known. By producing the stimuli at equal intervals and aligning the breaks indicating the time they were produced all on one vertical, one below the other, the breaks indicating the response of the subject will be on another line more or less zig-zag, depending on the degree of concentration of the subject. This gives a psychometricgraph of attention. By this method, we have had occasion to study the influence of fatigue upon attention, using as a subject the athlete M. B., whose remarkable muscular development we have mentioned in another chapter. These tests were suggested to us by the recollection of certain classic writers who had noticed in

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wrestlers an equillibrium between muscular and intellectual powers.

We remember how Diogenes, tutor of the sons of Xeniartes in Corinth did not want them to take any athletic exercise or have anything to do with the pedogribi. Plato in Book III of his "Republic" proposed that athletes be excluded from the administration of the State, because they were less industrious than other citizens, and he did not even want them in the army as they were an incumbrance in war because they quickly fell sick, being used to too methodical a regime. Aristotle declared that athletes were dull, and that the continued handling of heavy weights together with their monotonous life made them stupid. Alcibiades, Epaminondas and Philopoemen were also enemies of the athletic school. There is an account of one Croton athlete who was stricken with madness as he was about to receive the crown in the Olympic games. Galenus relates that on account of their violent exercises, athletes frequently suffered from epileptic fits, and styles athletics as ka Kote Xria. "Affectus Atheleticus non naturalis, habitus salubris melior," said Hippocrates. Plutarch states that Philip of Macedon compared the discourses of Demosthenes to his soldiers and the trash of Isacrotes to the athletes. Cartrault in his well-known work "Lutteurs Pugills" describes athletes as "champions redoubtables, mais d'une intelligence fort bornee."

Figures 64 and 65 reproduce the psychometricgraph of an athlete taken at two different sittings and show that in spite of the best efforts on the part of the subject the line uniting the moments of response is zig-zagged, the time varying as much as 60 thousandths of a second. This incapacity to fix their attention is characteristic of young persons and individuals affected with aprosexia, in whom the "physiological time" is notably greater as is also the "exponent of oscillation" and both vary considerably. Patrizi in taking the psychometricgraph of attention of a child of seven answering to stimuli of sound of equal intensity and at two second intervals, found a mean time of reaction of 289 thousandths of a second with a large "exponent of oscillation" (0:50); and, in the case of an invalid unable to concentrate her attention on account of a nasal affection, a mean of 207:0 for the physiological time,, and of 0:45 for oscillation, while with normal individuals, these figures were reduced to 0:173 and 0:18 respectively. An examination of the physiological capacity of an

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athlete showed an increase in the time of reaction to almost double the normal (300 thousandths of a second the first sitting and 295 the next) and the "exponent of oscillation" reached 0:60 the first and 0:45 the second.

M. B., whose motive centers were developed to such an extent by so much muscular work, showed the same incomplete development of the attentive centers as children have, producing the curve typical of those unable to fix their attention. It would seem that any extraordinary development of the muscles retards the development of the intellectual faculties. All the energy devolved by those men can be traced merely to some quality of their make-up, to their state of nutrition or to a hypertrophy of the muscles developed by prolonged exercise. Whatever is dependent on psychic sphere is very small. Such athletes ought from their constitutions to make the best of soldiers. Not equal reliance could be placed in their military aptitude, that would require the employment of entirely different cortial centers from those that govern the contraction of their hypertrophic masses of muscles.

The scientific examination of those heroes of the arena partially attentuates the celebrity with which they have been surrounded for centuries. While history has handed down the names of all the winners in the Olympic games, while Xenophon, Pausanias and Diodorus give us the names of the winners in the palestra, and Milo of Croton had the honor of a statue in bronze, and recalls the celebrated statue of Lisippus depicting the wrestler after leaving the palestra, removing the oil and sand from his body with a strigilus; today, at a distance of so many centuries, the glory of these champions is disappearing, and the visitor in the galleries of the Louvre or th Vatican, who stands filld with admiration before the masterpieces of Greek and Roman art, as he recalls the story of the gluttony of Milo, would concede that other persons and other ideals better deserve to be perpetuated in marble.

In the absence of Hipp's apparatus and the instruments necessary to make the psychometricgraph, we can determine by a simple experiment the influence of fatigue on the time of reaction.

Placing about thirty soldiers in a circle with their hands clasped, the observer, who is in the circle, squeezes the hand of the man on his left and simultaneously starts a stop watch. This

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man acknowledges that he has felt this grasp by squeezing the hand of the next man and so on around the circle, the observer stopping his watch the instant the man on his right squeezes his right hand. In this way we have to the fraction of a second the sum of these successive periods of reaction. Repeating the experiment on the same individuals, not only when rested, but after a long march or other fatiguing exercise, we can easily prove that muscular exhaustion increases to almost double the time of reaction.

(2) INFLUENCE OF FATIGUE ON THE MEMORY.

The quality of the memory is greatly altered by the effects of fatigue. Mosso relates that, although possessing a good memory of places, after ascending Monviso and Monte Rosa, he remembered nothing of what he had observed on those mountains: recollections of the ascent disappeared gradually as he neared the top. The poisoning of the blood with the products of fatigue and the consumption of energy by the nervous system bring about conditions that little favor activity of the memory. This failing of the memory is a phenomenon attendant upon the fatigue of climbing. Saussure states that when descending from the Colle del Gigante, he could not find words to express his thoughts. Vaccarone, one of the best known writers of the Italian Alpine Club, says he was always compelled to take notes during a trip, because the night he returned from a trip he could remember nothing, although the next day when he recovered his strength many particulars returned to him that he had forgotten entirely. The lamented Professor Gibelli, instructor in botany in the University of Turin, narrates that on climbs he had taken, he found that as soon as he began to feel fatigued he could no longer remember the names of the commonest plants. Professor Dupoy confirms these statements, saying that: "la lassitude musculaire produit chez moi une sorte d'affaisement intellectual, la memoire des mots est paresseuse, la conception moins nette et tout exercise de la parole me devient alors d'une veritable difficulte." Bettmann relates that he found the inability to remember numbers more pronounced after two hours of marching than after an hour of mental calculation: that the ability to add figures and to read aloud, undergoes a noticeable change through the effects of fatigue. Tissie

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cites the case of a student who was preparing for the entrance examination to St. Cyr, and at the same time exercising a great deal by fencing, and who, after such exercise, found the was incapable of repeating lessons he studied just before. The famous cyclist, Edoardo de Perredil, in describing a twelve-hour race, states that after nine hours he found it impossible to remember a line of a popular song that up to that time he had been singing to himself.

Zuntz and Schumburg in their famous experiments upon five pupils of the Frederick-William Institute, tested the memory by having a pupil repeat aloud certain numbers until he made a mistake, and found that the number of times he could repeat without a mistake was sensibly diminished when the pupil was fatigued.

We can satisfy ourselves of the existence of such phenomena by means of the following tests. Before a soldier who is in a state of absolute repose and at a moment when we know he is giving his utmost, we place a chess board with printed letters on some of the squares, then, taking it away, we have him write on a paper with ruled squares the letters he remembers having seen, arranging them as far as possible as they occurred on the chess board. We shall find that he will remember many of the letters, getting them in almost the same squares, but if we repeat the experiment after he is tired, we shall find that he cannot remember the relative positions of the letters nor the greater part of the letters themselves. We can also test his memory for lines, by showing him a paper ruled into twelve squares and with a different geometrical figure in each square, and shall find that after he is tired, he has the greatest difficulty in remembering any figures or in locating it on its proper square. So much for the memory of things seen. As for the memory for things heard, after commanding his attention, we can repeat aloud eight letters of the alphabet twice in succession with a brief pause in between; then we ask the soldier under observation to repeat them. In a fatigued subject we note a decrease in the number of letters remembered and an increase in the number of mistakes.

(3) INFLUENCE OF FATIGUE ON THE IMAGINATION.

Like the emotions, sentiments, affections, attention and memory, the powers of imagination undergo a certain depression under the influence of fatigue. The association of ideas is slower

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and the images dimmer. We can readily prove this if we have at hand a Morse telegraph apparatus. Connecting the sender and receiver we invite the subject under experiment to press the key every time we produce in his mind an image of an object or person. In this manner we have registered on the tape in successive points the time of the association of ideas. The words intended to express ideas instead of being spoken can be written on a pasteboard disc that is turned slowly so that the words appear singly through an aperture in a screen that covers the disc and allows but one word to appear at a time. Repeating the experiment when the subject is fatigued, we find it takes longer to produce the idea than when he was in a normal state. Galton did the same thing by writing words on slips of paper that he placed between the pages of a book like bookmarks and showed the subject one at a time by turning over the leaves, a chronometer indicating exactly the time taken in producing the image, which time was sensibly increased when the subject was tired. Claparede has made numerous experiments with similar results.

(4) INFLUENCE OF FATIGUE ON THE WILL.

We can consider attention like the will as the moderating instrument of ideas. We have already shown how fatigue can render one incapable of retaining a mental impression even for a very short time. It would not be strange then if we should find a similar relaxation of the power that restrains our actions, the will. The brain poisoned by the products of exhaustion is unable to discipline our actions or our ideas. Marshall Bugeaud, in his account of the conquest of Algeria, describes the complete demoralization in which he found the troops, worn out by climate and hardships, as having almost reached a suicidal mania. Tissie refers to a dual personality observed in the cyclist Jiel-Laval at the 1120th kilometer of the Paris-Brest race, who did not know whether it was himself or some one else who had covered the course. "Le me demandais," he writes, "comment et pour quel motif je me trouvais au milieu de la route; si c'etait bien moi qui avais fait tout ce parcours;" The celebrated Stephane on the same course complained that the others had taken too fast a pace from the start, whereas the records of the race show that he himself had set the pace, increasing it progressively up to 24 kilometers and 48 meters an hour. The will undergoes notable

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changes in the fatigued subject; from simple indecision he passes on to utter confusion. James says that fatigue reduces consciousness to a state where one loses all realization of the time and place. The will becomes unable to control the impulses, which can readily become irresistable. This defect of the activity of the will is especially noticeable in masses and readily becomes contagious. Constan, in this respect, says that he has noted in troops on the march how often a long distance will be covered without a man dropping behind, whereas if some falls out at the beginning, his example is quickly followed by others and the ambulance is soon overcrowded.

Payot, in his excellent book, "The Education of the Will," asserts that physical weakness and a lassitude of the nervous system can result in nothing other than a weak will and brief and languid attention. Almost always moral enthusiasm is manifested "in those happy moments in which the body like a musical instrument well tuned, performs its part without a false note, in those moments of full vigor in which the will is omnipotent and the attention tense; on the other hand when we are weak we feel the chains that bind spirit and body together, for the weakness of the will after the first period of exaltation gradually passes into a state of exhaustion that makes us fall at last into a condition of almost complete insensibility. In the Goncourt Journal consequences of "surmenage" are well described: "L' exces du travail produit in hebetement tout doux une tension de la tete qui ne lui permet pas de s'occuper de rien de desagreable, une distraction incroyable de petites figures de la vie, un desingeressement de l'existence reele, une indifference des choses les plus serieuses telle, que les lettres d'affairs tres pressees, sont remisees dans un tiroir, sans le ouvrir!"

We have several times had occasion to show that in the phenomenon of fatigue the physical element assumes considerable importance. The physical phenomena that are manifested through the effect of fatigue suggest the impossibility of continuing the work, before such impossibility is fully determined.

Dr. Dubois di Berna has studied the phenomenon of physical exaltation among soldiers worn out by a hard march, who, hearing the gay notes of the regimental music, seemed to regain vigor and step out as though their fatigue had vanished, and a new energy infused into their tired muscles. "I do not wish to maintain," he writes, "that an excitement of the senses can have no indirect

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influence on the muscular force, because diverse physiological experiments have established this action. But I do not see any creation of force in this phenomenon. Encouragement does not create force; it can only develop energy that already exists. Repose and food can alone restore to an organ the necessary force that it lacks: the former by replenishing the old cells and eliminating poisonous matters, the other by infusing nutrition. Physical excitement acts in another way on the brain. It dissipates that feeling of discouragement and that weakness that we call fatigue. In the same way that the feeling of weakness produces weakness, so force rises from the consciousness of its possession."

Tissie states that in the race from Paris to Brest and return, Terrout overcome by sleep after 66 hours of the road and three nights without rest, fell on the road, but seeing that he was about to be beaten suddenly regained possession of himself, got back on his wheel, and after a few moments of uncertainty, started off at a splendid pace, coming out on the level first. After a 1,000 kilometer race that had lasted 42 hours, the same cyclist remarked without ostentation that he could have gone another thousand kilometers "pour vu qu'on le remit en selle."

Souvaral wrote to Guiseppe le Maistre that victory always belonged to the army which was in the best physical condition in its advance against the enemy: "A battle lost is almost always one that seemed so beforehand." Prince Charles Frederick after the war of 1870, did not hesitate to say that victory or defeat was due more to the morale of the army than to tactics or strategy. Langlois affirmed that the actions taken on the field of battle were governed more by the spirit that directed them than the rifles that were carried. Captain Solariew, in his personal reminiscences of the Russo-Japanese War, writes: "As the battle grows fiercer and the losses increase and the nervous strain becomes more tense, the more gigantic becomes the task of the officers on whom the center of gravity of the troops is shifted as soon as fire is opened; they then become the head of their troops and are more directors of mind than commanders of rifles."

We can now thoroughly agree with the contention of F. Regnault: "The States of Europe are accumulating formidable engines of destruction by the thousands, cannon, rifles, torpedoes, mines, etc., and in case of war these will be found to have reached the utmost perfection. But who gives a thought to the moral factor? No one! And this, notwithstanding that it is the secret of all victories, and is the real decider of battles."

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The lessening of the energy of the voluntary movements is coincident with a change of personality. The worn-out individual is unable to appreciate the beauties of his surroundings; he remains indifferent to spectacles that ordinarily move him. "Surmenage" attenuates or perverts the sensibilities and the psychic functions. The automatism of the fatigued person is noticeable in many ways; especially in involuntary movements under the form of tic, such as scratching or rubbing, twisting the moustache, shifting the position of the feet, grimaces, knitting the eyebrows, blinking, the tendency to a nervous laugh or sneeze, etc. Some people talk aloud to themselves or run into people they meet on the street. Fere tells of a doctor who frequently when he was tired out by many calls during the day, would, as he approached a patient's house, take out his own latch key to unlock the door. Fatigue favors in general the return to vicious habits, alcoholism, smoking or venereal pleasures. "Surmenage" leads to moral perversion by disturbing the perception, the emotions and the will. Want of precedents and the impossibility of making a retroactive examination of the physical symptoms, render it difficult to make a strict classification of the mental disturbances of fatigue. Lieut. Surgeon Consiglio has had occasion to observe, after a forced march, that many soldiers, in whose cases the supposition of any pre-existing nervous trouble could be excluded, exhibited unexpected tendencies to do evil, when in a sort of blind fury brought on by a hallucinating headache.

Dr. Jacoby, head surgeon of the insane hospital of Orel, in Russia, has had opportunity to observe that the privations and hardships of war, the nervous tension from continually facing perils, alcoholism, and frequent mental shocks, bring about for the most part in troops, a predisposition to mental disturbances. In the Franco-Prussian War, he had noted a considerable number of psychic disturbances, generally under some form of degenerative manifestations and psychic traumatism. In the Russo-Turkish War of 1877-78, there were many cases of mental derangement in the Russian armies. More recently such cases have been frequent among Russian troops; during the China campaign of 1900, and in the garrison at Port Arthur. On board the "Manchuria" captured by the Japanese, were found 14 insane soldiers who had to be sent home. Jacoby states that many acts of crime committed by soldiers in time of war, are due to pathological disturbances and should be judged by a board of alienists

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rather than by court-martial. Professor Crisafully, in an excellent article on psychosis and crime, contained in a report to certain labor organizations which was read before the first international congress to investigate the diseases common among laborers, held at Milan, in 1906, maintains that over work often produces an exaggerated nervous excitability, an impressionability leading to melancholia, etc., that give the individual an impulsiveness and irresponsibility that often leads to crime. The man who is overworked is always inferior to his proper self, his psychic powers are so dulled that he allows himself to be governed by groundless fears, by unreasonable remorse, by doubts of every sort that exaggerate his prejudices and finally incite him to acts of violence.

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DRESSING STATIONS.*

A. P. NJEGODAJEW, senior surgeon, 67th Infantry regiment, contributes in the December, 1910, issue of the Wojennc Medicinskij Journal of St. Petersburg a readable article on the ever live problem of medical aid at the diverse dressing stations. He begins his article with a quotation from Pirogoff: "In war everything centers into administration."

The regulations governing the problem under consideration are incomplete, vague or superannuated. The Russo-Japanese War has plainly exposed the shortcomings, and the mistakes made must serve as stimuli for progress. The author complains that while he has seen a praiseworthy increase in the literature on all sorts of hospitals, sanitary-military transports, evacuation of wounded, mobilization, the movement of troops on the great Siberian Road, etc., the problem of dressing stations has received comparatively little attention.

Selection of Site for Dressing "Points."—Article 836 of the Russian Military Law says: "When a battle is imminent the Senior Surgeon selects the place for the dressing point. With the consent obtained for it by the commanding officer, he makes there the necessary preparations to render medical aid to the wounded and appoints for duty at it the physicians and sanitary personnel at his disposal." In brief, the place is selected by the highest ranking surgeon and the commander of the concerned troops. Njegodajew complains that during the last war, the surgeons were thrown on their own resources, selecting the places according to the disposition of the troops, or again commanding officers, apparently finding it unnecessary to consult with their chief surgeons themselves pointed out the places for dressing stations, though such action was contrary to the law.

The author plainly points out that there is no doubt left that the commanding officers had absolutely no confidence in the competence of the military physicians to decide such problems, but, on the other hand, the physicians were neither prepared nor posted, having had little if any training in sanitary-tactical problems, and the preparation and reading of military maps. The fault lies in the

*Translated for The Military Surgeon by Dr. G. M. Blech.

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system which deprives the medical corps of a definite military status and thus prevents it to fully unfold its wings, as it were. The result of it all was that the errors at times bordered on the ridiculous. Thus it happened that a "front" dressing station found itself located in the rear of a field hospital!

One colonel ordered a regimental surgeon to stay near him throughout a battle, forgetting that he had other duties besides the readiness to jump to save the precious life of the regimental commander. In 1907 and 1908 (November, same journal) Drs. Sassaparell and Denissow reported that certain colonels ordered the establishment of dressing stations, in addition to the regimental aid station, at the very frontal line, with the result that the wounded, fearing a second injury avoided these stations and ran to the rear. The surgeons, naturally, could not work quickly, and the wounded, who, as is well known, at all times show excitement immediately after the receipt of an injury, were doubly so excited and did not quiet down until they knew they were removed to the zone of safety.

These same authors state that there were cases when one first aid station had to change location five times during one battle. Of course, under such circumstances, it was not easy for the wounded to find the station.

The author appreciates that no set rule can be laid down for the locality to be selected. The character of the terrain, character and number of nearest lines of communications, the nature of the expected battle, the number of medical personnel and quantity of surgical material—all these things must be considered and estimated.

The tendency of commanding officers to have the aid stations too near the firing line, resulted in injury (wounds) to physicians, personnel and patients.

Article 1115 of the Russian Sanitary Regulations prescribes that dressing stations should be located, when possible, near water, in buildings, or tents behind the troops, covered against fire.

The author believes that this article leaves too much latitude to the individual in charge. Dr. Bauer (April, 1908, same journal) states that in the Russo-Japanese War the distance between the firing line and the dressing stations fluctuated between 1 and 3 versts=2-3 Am. mile), and more often the distance was 1-1½ versts. With the horse (field) artillery the difference in distance was only 150-250 sajens (1 sajen=Russian fathom). Bauer

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thinks the aid station should be no nearer than 3 versts from the firing line and the division lazaret still farther to the rear.

The law, the author thinks, while it cannot be expected to be absolutely definite, should state the principle; to be as close as possible to the troops, but outside the fire zone. The psychic relief alone that comes to the wounded, who have passed terrible minutes, is inestimable. *Experience in the war has shown that it is unwise to locate dressing stations in villages,* as the fire of the enemy is first of all concentrated on buildings visible to them. *Surgeons should also avoid places near the reserves,* as the sight of the wounded is apt to have a bad influence on the morale of these troops.

Dr. Bauer makes the valuable suggestion that the place for the regimental station be selected near the road on which the troops march to the firing line, (wounded know the road!) nor is it less important to select places where the roads leading from the firing line cross each other. (It has happened in the war that wounded failing to find the frontal aid stations, fell into the main dressing stations or even field hospitals).

The author bitterly attacks the lack of cohesion which was apparent during the last war between the diverse dressing stations, field hospitals, etc., so that often senior surgeons did not know where these stations and units were located. The line officers, on changing front forgot all about their sanitary personnel, their dressing, aid stations and field hospitals, so that often regimental aid stations had to search for their regiments. That this proved disastrous to the transportation of the wounded needs no proof. Bauer recommends that the entire medical organization be centered in one chief surgeon for the military unit (division, army corps, etc.), and that the chief surgeon be with headquarters and in constant touch with divisonal and senior regimental surgeons. The author naively gives this as the Austrian system.

Clerical labor should be reduced to a minimum. Art. 1129 prescribes that at the frontal dressing station a wounded man is asked his full name, and troop of service, which must be entered in a special book. If unconscious he is entered "numerically," the troop to which he belongs being determined by the uniform. Name is entered later when patient regains consciousness. When wounded are to be transported to field hospitals, the time of feeding is noted and sent with them. On arrival a receipt from the field hospital is obtained. Officers are given certificates showing char-

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acter of wound, operation performed, etc. This is cut out from the aid-station book. To this must be added all sorts of reports and correspondence. As an example, in July, 1905, an order was published to daily report by phone to headquarters all gastro-intestinal affections. Fortunately this order was changed to report once a week.

Dr. Wrjeden estimates that on the average the regimental aid stations, after large battles, attended about 600 wounded. If one takes into consideration the fact that most of the work is done at night after the cessation of the cannonade and that rain usually follows the latter, and that the illumination is poor, and that often much of the work has to be done in the open air, then the question presents itself: is it possible, under such circumstances, to do any clerical work at all? The author thinks all sorts of registration should begin at the main dressing points. The use of colored tickets to indicate the gravity of the wound (diagnosis tags) was not then in use.

The author condemns the ambulance-vehicle and dwukolki (two-wheelers) as "producers of unnecessary tortures" to the patients in transport. He criticises the insufficiency of the tentage, but especially their complicated structure, so that much time was wasted in an endeavor to pitch first-aid stations, a thing that the sanitary personnel should have been familiar with beforehand.

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Current Literature.

Titles marked with an asterisk (*) are abstracted below.

FRANCE.

Archives de Médecine et de Pharmacie Militaires,

April, 1911.

1 Local Hydro-Chemical Therapy by Means of Electric Ionotherapy. Rebierre.
2 *Amoebic Abscess of the Liver. Basseres.
3 Two Cases of Obstinate Typhoid Hemorrhage. Marotte and Oui.
4 Luxation of the Tarso-Metatarsal Articulation. Petit.
5 Contribution to the Study of Foreign Bodies in the Lower Air Passages. Tricot.

2. **Amoebic Abscess of the Liver.**—A soldier who has never been in the Tropics was operated on for liver abscess in the ninth interspace. No amoebae were found in the pus, but they were numerous in the stools. Ten days after operation an indurated patch appeared in the lower part of the drainage opening. This enlarged and two stitchholes became ulcerated. Active amoebae were found in the serum from these ulcerations of the skin. The ulcerations resisted ordinary antiseptic dressings, but improved under Labarraque's solution. Basseres emphasizes the infection outside of the tropics and the skin lesions due to amoebae.

H. J. Nichols.

Archives de Médecine et Pharmacie Navales,

6 Typhoid Peritonitis in the French Navy: Its Varieties and Treatment. M. le Dr. Chabaune.
7 Mental Confusion and Dementia. M. le Dr. James.
8 Ministerial Instruction Relating to Measures of Disinfection, to be Applied to Ships of the Fleet, and Different Land-Services.
9 *The Real Peril of the Plague in China. (Translated from the Lancet, February 4th, 1911.

9. **The Real Peril of the Plague in China.**—The news recently received from China on the subject of the advance of the Plague in that Country, reveals a situation which is very grave.

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The disease commencing in Mongolia, gradually extended to Manchuria; from there it has spread to Chefoo, and other cities in the province of Shantung, to Tien Tsin, and even to Peking. and there is now a tendency to advance upon the interior of China. Unfortunately the type of the disease is pneumonic, which explains both, the rapidity of invasion, and the excessive mortality. In the city of Mukden, the last information announces over 150 deaths daily from plague. Among the victims were two doctors, a Frenchman, Dr. Mesny, of Tien Tsin; the other an Englishman and medical missionary, Dr. A. F. Jackson; both of whom had abandoned their professional work to devote themselves to the treatment of the plague. A doctress, Madame Lebediff also lost her life in caring for the stricken. At Kharbin, another city of Manchuria, more than 1,200 persons have succumbed and thousands of inhabitants have fled in panic, transporting germs of infection.

Such a state of affairs exists that business is arrested, and it is impossible in many cases to find the labor to give sepulture to the dead; bodies abondoned in the streets are half eaten by dogs, and in default of easy burial, many are thrown in the river. In face of this situation, the Chinese authorities have evinced generally a disposition approaching brutality. Through the representations of the Consular officers, the Chinese Government has commenced to awaken, but it seems embarrassed to know what part to take. About 15 days ago, the Minister of Foreign Affairs for Russia, proposed to the Government of Peking the organization of a scientific international expedition into Manchuria, to study the epidemic. We learn that a note to this effect has been addressed to the powers by the Chinese Government soliciting their aid in studying the cause, and means of combating the disease, each power is invited to name an expert, who will be part of the international commission, and it is specified that all charges will be born by the Chinese Government. We are not sure that this reunion of savants in the present juncture is the most efficacious means of combating the plague in China, we rather think that the most necessary thing will be the organization of an administration, capable of taking steps and with power to impose them. The bacteriology of the plague and its various modes of transmission to man, have been carefully studied by the Indian Commission. In our opinion, to put into practice the knowledge acquired by a competent administration, will be in the present

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crisis a better solution to offer, than the opinion of savants, if it is desirable, to put an end to the increasing sacrifice of human life.

China, with its four hundred million inhabitants, has not yet understood the necessity of following the progress of hygiene. If the epidemic pursues its march, with the present proportion of victims, we fear a sacrifice of human life, in comparison with which the cruel experiences of India will be insignificant.

J. C. WISE.

Bulletin de L'Academie de Médecine,

No. 13, April 3rd, 1911.

10 *Report Upon the Indications for the Employment and the Effect of Anti-tetanic Serum. M. Vaillard. Reporter.
11 Preparatory Schools. M. Motais.
12 Upon the Nature of Syphilitic Icterus. M. Gaucher and M. Giroux.

10. **Report Upon the Indications for the Employment and the Effect of Anti-tetanic Serum.**—M. Vaillard reports that the employment of anti-tetanic serum is of great value in the prophylaxis of tetanus and that no harmful effects are observed as the result of the serum. As a curative measure it is efficient only if employed very promptly.

No. 14, April 10th, 1911.

13 Preparatory Schools of Medicine, Report on.
14 Curable Myocarditis. M. Ch. Fiessinger.

No. 15, April 17th, 1911.

15 Researches upon Albumin in the Expectoration M. H. Roger.
16 *The Wassermann Reaction in Researches upon Latent Syphilis. M. Maurice Letulle and M. Andre Bergeron.

16. **The Wassermann Reaction in Researches upon Latent Syphilis.**—Letulle and Bergeron write of the great value of the Wassermann reaction in the detection of latent syphilis and of the syphilitic nature of conditions which without the use of the test would be considered as due to other causes. They report cases of chronic myocarditis, valvular insufficiency, chronic aortitis, and aneurism in which the Wassermann test was positive and proved their syphilitic origin. In eleven cases of chronic aortitis, seven gave a positive Wassermann reaction; and in three cases of aneurism of the aorta, two gave a positive reaction. In cases of

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hemiplegia the reaction should always be utilized, as a large proportion of such cases give a positive result, and the authors also urge its application in other forms of paralysis. The use of this test has thrown a flood of light upon conditions which, before it was discovered, were unsuspected of being of luetic origin, and has taught us that syphilis may lurk in the most unexpected places and be the cause of many maladies innocent in appearance.

CHARLES F. CRAIG.

Le Caducée,

April 1, 1911.

17 Malta Fever (a summary of our knowledge of this infection). D. Scialorn of Tunis.
18 *Tropical Pathology.
19 The Ambulance Dog in Holland.
20 Field Medical Service in the Past. M. L. Arnaud.
21 Electric Ionotherapy and Mineral Waters. Surgeon-Major Rebierre.
22 *Cholera-Bacillus Bearers.

18. **Tropical Pathology.**—E. Legrain shows the frequency of serous pleurisy (non-tuberculous) in warm countries in connection with hepatic insufficiency. This insufficiency may be latent for a long time and compatible, for years, with fairly good health, but is always liable to become suddenly aggravated by some unusual exciting cause, especially fatigue and cold. Thus, a cirrhotic soldier in the first stage, without edema or ascites, may still be able to make long marches until, for instance, he lies down on the ground overnight and is surprised, in the morning, to be unable to buckle his belt on account of marked ascites. In men with dysenteric symptoms and hepatic insufficiency, so numerous in the tropics, a similar occasional cause may determine acute symptoms, among which should be expected sudden effusions in the pleura and abdomen.

22. **Cholera-Bacillus Bearers.**—The board of health of Amsterdam has made a careful inspection of all ships coming from cholera-infected Russian ports. M. Van Loghem examined the crews of 14 steamers, although no case of cholera had occurred on board before sailing, during the trip nor after arrival. Of the 298 men examined he discovered four healthy carriers of the vibrio of Koch; one had a slight diarrhea while the others were

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constipated. In two of them the bacilli were only found one day, but in the other two they remained eight and thirteen days, respectively. Their virulence, as tried on guinea pigs, was inconsiderable, although clearly differentiated from the El-Tor strain.

April 15, 1911.

23 Vaccination in the Colonies. Medical Inspector Kelsch.
24 Experimental Shooting with a New Projectile. Hans Daae, Kristiania.
25 *Ambulance Dogs in the French Service.
26 Improvised Sheltered Stretcher. Dr. Romary.
27 *Spinal Anesthesia.

25. **Ambulance Dogs in the French Service.**—The minister of war has authorized the "National Society of the Ambulance Dog" to take part in the maneuvers and exercises of the medical department, and the results are described as eminently satisfactory. The minister of war has accordingly decided to establish, in Fontainebleau, with the cooperation of the Society, a military kennel, which is to become a training school for dogs, such as already exists in Italy. The National Society is organizing a similar training kennel so as to be in position to supply the War Department with all necessary animals.

27. **Spinal Anesthesia.**—Dr. Urdareanu describes 40 operations performed from November 15, 1910, to March 15, 1911, under spinal anesthesia, according to the method of Prof. Foma Jonesco. He injects stovaine and strychnine in the proportion of grm. 0.06 of stovaine and 0.0005 of strychnine to a half gram of distilled and sterilized water. Complete paraplegia is established in two minutes. Of the 40 operations, 28 were for various forms of hernia. No appreciable nervous symptoms were noted, such as incontinence or retention of urine. Headache is not rare during the first day, but easily controlled. The pulse may or may not be increased, while the temperature remained normal in all the cases. The author considers this form of anesthesia about ideal for all operations which admit of it.

V. HAVARD.

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GERMANY.

Deutsche Militaerarztliche Zeitschrift,

April 5th, 1911.

28 Some Points in the Treatment of Military Prisoners. Kruger.
29 Design for a Box to Exhibit X-ray Plates with Simple Means Available in a Hospital. Kuchendorf.
30 Ulcers of Artificial Origin. Violin.
31 Remarks on the Note of Budde. Herhold.

April 20, 1911.

32 Investigations with a New Form of Bed in Post Hospital in Berlin. Heckmann.
33 On Fracture of the Cartilage of the Larynx. Zedler.
34 *A Case of Subcutaneous Transverse Rupture of the Spleen on the Maneuver Field. Filbry.
35 Pergenol, a Stable Hydrogen Superoxide, and Its Applicability to Military Surgery. Syring.
36 The 19th Meeting of Military Surgeons in the United States. Blech.

34. **A Case of Subcutaneous Transverse Rupture of the Spleen on the Maneuver Field.**—Filbry states that a machine gun tipped over on a gunner about 9 o'clock in the morning. The right collar bone was broken and the chest and abdomen bruised. About five o'clock in the afternoon signs of internal hemorrhage appeared; rapid and weak pulse, skin pale and clammy. At seven-thirty the abdomen was opened and the spleen was found to be completely ruptured transversely. Both parts were removed; one litre of salt solution was given subcutaneously. Complete recovery in 3½ months.

H. J. NICHOLS.

GREAT BRITAIN.

Journal of the Royal Army Medical Corps,

April, 1911.

37 Further Observations on the Use of Salvarsan in Syphilis. Major T. W. Gibbard, Captain L. W. Harrison, and Lieutenant A. S. Cane, R. A. M. C.
38 On the Fate of Arsenic in the Body After Injection, in the Form of Salvarsan or "606." Major W. W. O. Beveridge, D. S. O., and Captain N. Dumbar Walker, R. A. M. C.
39 Further Results of the Experimental Treatment of Trypanosomiasis, Being a Progress Report to a Committee of the Royal Society. H. G. Plimmer, F. R. S., Captain W. B. Fry, R. A. M. C., and Lieutenant H. S. Ranken, R. A. M. C.

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40 Convoys of Evacuation. Major W. E. Hudleston, R. A. M. C.
41 Report on the Present Condition of Ismailia as Regards Malarial Fever. Colonel Sir David Bruce, C. B., F. R. S.
42 *The Definition of a Unit's Protection by Anti-Typhoid Inoculation. Colonel T. M. Corker.
43 *The Motor Clearing Wagon. Captain F. Harvey, R. A. M. C.
44 Notes on a Case of Syphilis Treated with Salvarsan. Captain H. K. Palmer, R. A. M. C.
45 Report on the Treatment of a Chronic Typhoid Carrier by a Specific Vaccine. Major R. W. Clements, R. A. M. C., and Captain A. Dawson, R. A. M. C
46 A Case of Emboli Originating from a Cardiac Clot Producing Acute Abdominal and Other Symptoms. Lieutenant J. B. Jones, R. A. M. C.
47 A Case of Penetrating Wound of the Chest: Operation—Recovery. Captain W. L. Bennett, R. A. M. C.
48 Ether in the Tropics. Captain V. T. Carruthers, R. A. M. C.
49 The Absorbent-Stone. A Day with Cobra-Hunters. Captain W. F. Reichwald, R. H. A.
50 Abridged Report of a Tour from Freetown to Monrovia Through the Protectorate of Sierra Leone and Liberia. Major A. Pearse, R. A. M. C.

42. **The Definition of a Unit's Protection by Anti-typhoid Inoculation.**—Colonel Corker says that the state of protection of an individual or of a regiment is very difficult to define as not only does the susceptibility of individuals vary greatly, but the period of protection afforded by inoculation or even by an attack of typhoid fever cannot be stated with certainty. It is very difficult to settle the period of protection.. It has been decided to accept at any rate as a temporary basis the general idea that two years be regarded as an approximate estimate. Lieut. Col. Leishman stated in the Harbon Lectures of 1910 that he thought that the average duration of immunity after inoculation is about two years, and that it is his custom to recommend reinoculation after this period has elapsed. The author states that Lieut. Colonel Leishman says that men have in many cases completely outworn their immunity and this being the case his statistics may unquestionably be presented still more favorably. He gives as a result of records affecting some 20,000 men, a case incidence of 5.39 per 1,000 among the protected as compared with 30.4 among the unprotected.

43. **The Motor Clearing Wagon.**—Captain Harvey says that the need of a motor clearing wagon has become obvious; the

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type, however, is awaiting evolution. Vehicles called "motor ambulances" were in use at recent Army maneuvers. Their value was fully evident, their mechanical efficiency satisfactory, but the type of the body and chassis, for war purposes, was, to put it mildly, quite hopeless. They were uncomfortable, stuffy and very shaky. This last was due to the solid wheels, the heavy body and the very powerful springs. The author says that the six essential points are:—(1) lightness; (2) handiness; (3) speed; (4) comfort; (5) maximum accommodation; (6) adaptability. He presents a plan of a motor vehicle in which sixteen patients can be carried; four of them lying down. The role of the motor clearing ambulance wagon will be the evacuating zone, and the region between the clearing hospital and the advanced base will be the scene of its greatest activity. Captain Harvey says that given a certain number of these vehicles with an army in the field, the problem of the clearing hospital appears solved. Much time, horseflesh and labor will be saved, to say nothing of its administrative economies. It will help to solve the blocked road problem on the lines of communication and most important of all from the medical point of view, it will make the clearing hospital mobile and able to clear itself.

ALBERT G. LOVE.

The Indian Medical Gazette,

April, 1911.

51 *Malarial Cachexia, and the Value of Arylarsenates in the Treatment. Capt. H. W. Pierpoint, F. R. C. S., I. M. S., and Lieut. H. W. Acton, I. M. S.

52 A 50-Rupee Operating Theatre. Lieut. A. Cranstoun Charles, I. M. S.

53 Three Cases of Pseudo Muscular Hypertrophy in one Family. Lieut. Col. R. H. Castor, I. M. S.

54 More Notes on Jail Dysentery. Capt. W. Gillitt, M. B. (Lond.), I. M. S.

55 The Use of Bismuth Paste in Chronic Suppurations. Lieut. Col. F. P. Maynard, I. M. S.

56 The Examination of the Faeces for Ova of Intestinal Parasites. Capt. J. Taylor, I. M. S.

57 Notes on Some Interesting Surgical Cases. Major W. J. Niblock, M. B., F. R. C. S. I., I. M. S.

58 A Case of Tetanus. Lieut. J. Crawford Boyd, I. M. S.

59 *Solid Carbon Dioxide: Its Preparation and Indications for Use. Capt. E. A. C. Mathews, M. B., I. M. S.

60 Infantile Biliary Cirrhosis. Bhupsingh.

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51. **Malarial Cachexia, and the Value of Arylarsenates in the Treatment.**—The authors state that the spleen and to a lesser extent the liver are required to deal with the detritus that is left as the result of an attack of malarial fever. Sometimes the effete products of malarial disintegration occur in so large a quantity that these organs are unable to cope with them and a condition of stasis occurs. The results of the lack of compensation will be evident in different forms. We may refer to these as follows:

1. Toxic anemia, resembling in every respect persons rendered anaemic from a grave hemorrhage.

2. An acute post-malarial type of pernicious anaemia occurring after an attack of malarial fever has apparently been recovered from.

3. A true pernicious anaemia occurs very infrequently.

4. Chronic malarial cachexia.

The above types of anaemia, especially the chronic malarial cachexia, show frequently, although by no means necessarily, marked enlargement of the spleen. The different types of malarial spleen may be classified as follows:

1. Acute hyperaemic spleen.

2. Chronic fibroblastic spleen.

3. Chronic fibrotic spleen or ague cake.

The authors sum up the treatment of malarial cachexia (excluding the pernicious anaemia cases) as follows:—

"1. Rid the host of all parasites by quinine in adequate doses.

"2. Stimulate the haemopoietic organs by intra-muscular injections of Soamin in the following way:—

"Give grains v of Soamin every second day—6 injections in all. An interval of 10 days is then allowed to elapse and another 6 injections are given as above. In no case should 100 grains be exceeded as the total amount injected.

"From our experience we should say that practically every case in the 1st and 2d stage of splenic enlargement will yield in 40-60 days' time to a treatment with 60 grains of Soamin.

"In the advanced stage the patients will be markedly benefited by the same treatment and only the dense fibrous tissue of the old inflammation will be left to cause a slight degree of splenic enlargement. It is in this stage that the operation of splenectomy becomes justifiable, and it is only in those cases (A) where, owing to the weight of the organ and consequent pressure on the stomach, life is made a burden, partly by the dragging pain that

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is caused and partly by the discomfort after every meal. Or (B) in acute and chronic twisting of the splenic pedicle."

59. **Solid Carbon Dioxide: Its Preparation and Indications for Use.**—Capt. Mathews describes the following method of preparing a cylinder of carbon dioxide snow:

"A round ruler about a foot long is taken, and an ordinary small huckaback towel is folded so that its breadth is equal to the length of the ruler; the latter is tightly rolled up in the towel and then removed, a cork being inserted at one end of the hollow tube resulting; the other end of this is placed over the stop-cock of a carbon dioxide cylinder, and it is an advantage if this stop-cock is rectangular instead of straight as is usual, the towel with its cork is then bandaged in this position on to the stop-cock, just tightly enough to keep it in place by itself; the gas is then turned on and escapes into the towel, which appears to 'steam' slightly, suddenly, in about fifteen or twenty seconds, there is a considerable outburst of 'steam' when the gas should be turned off. On removing the bandage and unrolling the towel a solid white cylinder is found, very like plaster of paris in appearance, its solidity depends on the skill with which the gas has been managed, and this is obtained with a little practice. Small pieces may be taken in the fingers for a few seconds with impunity, later they induce a burning sensation, and if held still longer, a blister may result, but it can be handled without harm if wrapped in a layer of cotton wool or in two or three turns of flannel bandage.

"If properly made, the solid cylinders, as described above, are quite hard enough to use in treatment; but if they turn out rather soft, they can be compressed by being put in a piece of iron piping of a slightly larger diameter and rammed down tight with an iron plunger."

He says that the most successful cases for treatment with this substance are the superficial naevi so common in infants.

"The method adopted in the case of a naevus with a diameter of one inch or less is to flatten and shape to the required dimensions one end of the solid carbon dioxide cylinder, then to press it firmly on the naevus for from ten to twenty seconds according to the age of the child and the thickness of the skin; on removing it a hard white plaque of skin is seen where it was applied, which gradually disappears in the course of a few minutes, and the naevus assumes almost its original condition; if seen a week later,

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the part treated appears as if it had been partially blistered, or even completely if treated too long, while in about three weeks nearly normal skin has replaced the naevus, although it takes about three months for all signs of the growth to disappear; at the end of that time, however, it has done so completely and permanently.

"There seems to be little pain during the application, but the infant generally cries lustily for about ten minutes while the reaction is taking place

"If the naevi are larger, the carbon dioxide may be applied in more than one place, but not more than four applications should be done at one sitting, and they should not overlap, further treatment being continued about three weeks later, when the original places have practically healed."

This substance is also used for the treatment of naevoid conditions in adults. It has been claimed that it is a specific for warts.

"Treatment with this substance is still more or less in the experimental stage, but it will in course of time probably be found of great utility in the treatment of many superficial skin diseases."

ALBERT G. LOVE.

ITALY

Annali di Medicina Navale e Coloniale,

February, 1911.

61 Sea Sickness. G. Mola.
62 *The Injured in Naval Service. A. Giannone.
63 Clinical Cases in Psychiatry (2). E. Madia.

62. **The Injured in the Naval Service.**—Dr. Giannone has made a statistical study of 3,086 cases of injury due to accident occurring in the Italian Navy for a period of over 30 years. His paper is accompanied by copious tables. The author concludes that it is impracticable to classify the injured very accurately by occupation as members of the naval force are called on for services of various kinds, and that injuries can be strictly classed as occupational only in a limited group of specialists living under special conditions.

In general, injuries were most frequent among firemen and then, in the order named, among machinists, torpedo-men, gunners and sailors, all these forming what may be called the "industrial population of the Navy."

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Age and length of service have no effect upon the occurrence of injury. The great majority of injuries are to be classed as fractures, (including the loss of portions of fingers) followed in frequency by lacerated and contused wounds, and burns. The most common injuries are those of the fingers, of the lower extremity. and of the upper extremity, in the order named.

W. D. McCaw.

Giornale di Medicina Militare,

March, 1911.

64 An Account of the Autopsies Held in the Military Hospital of Naples from July 1st, 1902, to August 1st, 1910, with Histological and Bacteriological Reports of the More Important Cases. A. Bevacqua.

65 *On the Influence of Ultra-Violet Rays upon Micro-Organisms "in vitro" and "in vivo." G. Rizzuti.

66 The Doctrine of Germ Carriers and the Prophylaxis of Infectious Diseases in Military Life. F. Testi. (Continued).

65. **Ultra-Violet Rays.**—An important paper read at the fourth Congress of the Italian Society for the Advancement of Science. Cultures of pathogenic and saprophytic bacteria were made in various media and after the usual laboratory methods and exposed to the rays at different distances and with varying amperage. Subcutaneous and endoperitoneal cultures in living animals were also exposed. The details of the experiments are too long to be abstracted, but the author concludes, that the ultra-violet rays have a very great bactericidal power and even when this is not fully manifested, owing to too brief exposure or a too feeble source of light, the rays always show their power to modify all signs of bacterial life. The resistance shown by micro-organisms varies according to species, and according to both the natural habitat and the artificial culture medium. The power of penetration is limited in depth. The rays are shown to have no effect upon the virulence of germs beneath the skin.

W. D. McCaw.

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RUSSIA.

Medizinskija Pribawlenija k Morskomy Sborniko,

February, 1911.

67 *Observation of the Voyage of the Icebreaker "Taimujr," through the Tropics to the Arctic Ocean, from a Medical Point of View. Dr. L. Starokadomski.

68 *Experimental Study on the Regeneration of Tissue in Wounds of the Spleen. A. Polosow.

69 Insurance of Laborers of Governmental Wharves in Germany. A. D. Oserow.

67. **Observation of the Voyage of the Icebreaker "Taimujr," Through the Tropics to the Arctic Ocean, from a Medical Point of View.**—The naval transport-icecutter "Taimujr" left St. Petersburg October 27th, 1909. The personnel consisted of seven officers, 33 sailors, 1 skilled mechanic, and 1 civilian cook. The sailors were practically recruits. The ship suffered from a storm November 11th while in the German Sea, which necessitated a delay from November 15th to January 26, (1910) at Havre. Stops were subsequently made at Algiers,, Port Said, Ysmail, Port Suez and Gibuti. From here it left March 23rd and arrived 16 days later at Colombo. Stopping among other places at Singapore and Amoy, it arrived at Vladivostock July 3rd. The author reports average temperature and climatic conditions at the diverse ports. In the tropics he had one case of tertian malaria, in an officer heretofore free from malaria (plasmodia demonstrated) and a fairly large number of tropical exanthemata (vesicular type) which disappeared after a few days; some cases of trauma and burns. On arrival at Vladivostock 17 cases of acute gastro-enteritis appeared, but none required removal to the hospital. The majority of the personnel had lost 3 to 5 pounds (Russian) in weight.

Venereal prophylaxis consisted of inunction with 33% calomel ointment and instillation of a 20% protargol-glycerine emulsion. This measure was not obligatory, but its value was explained and gladly accepted. Patients reported the morning after return from shore leave, seldom on the evening of the same day. The patients themselves applied the ointment to the glans and the inner sheath of the prepuce and instilled into the urethra 2 to 3 drops by means of an ordinary dropper. In one instance, 3 to 4 days later, a slight irritation of the urethra appeared, but the calomel ointment produced no undesirable effects. The author, throughout the entire journey observed but one case of acute gonorrhoeal urethritis. This

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patient had coitus a second time after the treatment, believing the one application sufficient. The author does not consider the prophylaxis ideal, but certainly useful. (The method certainly is to be condemned. The protargol is too irritating and 2 to 3 drops may not be effective enough. Finally the measure is applied too late if a night is permitted to elapse between coitus and precautionary treatment.—G. M. B.)

After a brief stay at Vladivostock where the command took aboard suitable clothing it proceeded north. The dietetic measures reported by the author are in accord with the teachings of Dr. A. A. Bunge. The command left 1 man at Algiers and 19 at Vladivostock. 26 new men were taken on at that port. All had to be in good health. Carious teeth were either extracted or filled. Each man was furnished with a tooth brush and tooth powder—a mixture of purified chalk and burnt magnesia. Many drugs and dressing material in large quantities were added. The trip lasted from August 17th to October 20th, but in spite of heavy labors and extreme cold not a single case of serious illness developed and the majority gained in weight.

The author was directed to make bacteriological tests and study the fauna of the high north. He describes in graphic language the monotony of life in Arctic regions. The absence of electric light (for some time) proved distressing. A moving picture outfit had been taken along and proved of value to break the monotony. The author makes many recommendations as regards the quarters for the men, the nature of condensed (canned) foodstuffs, etc., but nothing that is not already known to us from a perusal of the literature on Arctic exploration.

68. **Experimental Study on the Regeneration of Tissue in Wounds of the Spleen.**—An extremely interesting and highly scientific anatomico-pathologic study. Nothing startling new, however, was brought out, in spite of several painstaking experiments on dogs. On the whole the results coincide with the labors of such pathologists as Ceresole, Dannenberg, Dominici, Schridde and many others.

G. M. Blech.

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Wojenno Medizinskij Journal, St. Petersburg,

February, 1911.

70 The Therapeutic Application of Tesla and High Frequency Currents. (Continued). I. Th. Kotovich.
71 *A Case of Fracture of the Sternum. W. D. Konopljankin.
72 Sterilization of Silk with Iodine. W. P. Garmashew.
73 The Technics of Filling Teeth. M. N. Kokushin.
74 Hospital Cases: Vitium Cordis Congenitum; Heterotaxia; Cancer Pylori et Pancreatis; Abscessus Hepatis; Leukaemia cum Erythraemia. W. Th. Bushujew.
75 *Remark on Ficker's Method of Diagnosing Typhoid Fever. A. A. Archipow.
76 Maneuver of the Grenadier Corps in 1909. Sanitary-tactical Activity of the 1st Grenadier Division. W. W. Zagluchinski.
77 Examination of Young Soldiers of Doubtful Health. P. N. Golubintsew.
78 *Determination of Length of Labor of the Sanitary Service in the Zone of Active Operations. S. A. Shanjawski.
79 Optic Ataxia and Proper Aiming of Shots. K. W. Noishewski.
80 A Case of Operation for Seclusio et Occlusio Pupillae. S. W. Saweljew.

71. **A Case of Fracture of the Sternum.**—The rarity of fractures of the sternum makes this contribution one of interest, and especially so because the lesion occurred in the lower third, which is rarest. It concerned a twenty-two-year-old sailor who fell from some height against an open iron door. He did not lose consciousness, but complained of vertigo and a sharp pain in the region of the sternum which became increased on breathing, as a consequence of which breathing is labored and superficial. The patient on arrival at the hospital sits with head thrown backward and flexed spine. Face blanched—speaks with difficulty. Motion of upper half of thorax normal—lower half imperceptible. Typical appearance of fracture—upper part forms a prominence as compared with lower, which has receded. No fracture of ribs or cartilages. Pulse soft, scarcely perceptible in the left radial artery, right—58, carotid arteries—64 per minute. Heart borders normal—auscultation negative. Attempts at reduction futile, and the patient's condition could be made less painful by placing him in a position with head and trunk bent backward.

Reduction was finally established by compression with the open hands of the upper thorax while the patient was made to take deep respiration, thus forcing the lower thorax to motion. At once the

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breathing and pulse became better. Circular bandages applied in a manner to hold a 5-lb. sandbag against the upper sternum. Recovery.

75. **Remark on Ficker's Method of Diagnosing Typhoid Fever.**—Archipow, who has worked two years with Ficker's diagnosticum, believes it of special value to such military physicians who either lack bacteriologic laboratories or who are not well versed in bacteriologic work. As the abstractor knows nothing about the merits of this "test-tube" method, he desires merely to call attention to it.

78. **Determination of Length of Labor of the Sanitary Service in the Zone of Active Operations.**—Shanjawski has undertaken to figure out an interesting set of mathematical tables on this subject. One example to show his method of figuring will suffice. Question of time necessary for the removal of wounded from the firing line to the dressing station.

Let us assume that N wounded must be removed by M litters to the station at a distance of a verst (3 versts=2 miles) the litter bearers cover a verst in a minutes, and on return with empty litters a^1 minutes for each verst; t minutes are required to administer first aid and to load and unload each patient. Question: how much time (T) is required to remove all wounded to dressing station?

Applied to one patient we have the formula:

$t+av+av^1=t+a\ (v+v^1)$, and for N wounded $[t+a\ (v+v^1)]\ N$; and carried on M litters $T=[t+a\ (v+v^1)]\frac{M}{N}$. . . . Experience shows that t=30 minutes, v=30 minutes, and v^1=20 minutes, hence the formula for 1 patient is:

$$T=\frac{10\ (5\ a+3)\ N.\ .\ .\ .\ .}{M}$$

Example: A regiment of 4,000 losing 200 wounded needing re-

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moval. All regimental litters (M=32 at a distance of 3 versts (a=3). How much time will be required?

$$T = \frac{10\ (5 \cdot 3+3)\ 200}{32} = 1{,}125 \text{ minutes or about 19 hours.}$$

The author supplies large tables covering all sorts of distances, number of wounded, and number of litters and ambulances.

Amount of Time Needed for Removal of Wounded (32-400) to Dressing Station at distance of 1-5 versts from firing line, with 32 litters (Regimental).

No. of wounded.	Distances.									
	a=1 vr.	1 1-2 vr.	2 vr.	2 1-2 vr.	3 vr	3 1-2 vr.	4 vr.	4 1-2 vr.	5 vr.	
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	
N=32.....	1 20	1 45	2 10	2 35	3 —	3 25	3 50	4 15	4 40	
40.....	1 40	2 11	2 42	3 13	3 45	4 16	4 46	5 17	5 49	
50.....	2 05	2 44	3 23	4 02	4 41	5 20	6 —	6 38	7 17	
60.....	2 30	3 17	4 04	4 51	5 38	6 25	7 12	8 —	8 46	
70.....	2 55	3 50	4 45	5 40	6 35	7 30	8 25	9 20	10 15	
80.....	3 20	4 22	5 25	6 27	7 30	8 32	9 35	10 37	11 40	
90	3 45	4 55	6 05	7 16	8 26	9 36	10 47	12 —	13 08	
100.....	4 10	5 28	6 46	8 04	9 22	10 40	11 53	13 16	14 34	
120.....	5 —	6 33	8 07	9 41	11 15	12 48	14 22	15 55	17 30	
140.....	5 50	7 40	9 39	11 20	13 10	15 —	16 50	18 40	20 28	
160.....	6 40	8 45	10 50	12 55	15 —	17 05	19 10	21 15	23 20	
180.....	7 30	9 50	12 10	14 32	16 52	19 12	21 33	23 53	26 13	
200.....	8 20	10 56	13 32	16 08	18 45	21 20	23 57	26 34	29 10	
220.....	9 10	12 —	14 53	17 45	20 37	23 29	26 21	29 13	32 05	
240.....	10 —	13 07	16 15	19 22	22 30	25 37	28 45	31 52	35 —	
260.....	10 50	14 13	17 36	21 —	24 22	27 45	31 08	34 31	37 55	
280.....	11 40	15 15	18 50	22 27	26 02	29 38	33 03	36 39	40 05	
300.....	12 30	16 25	20 19	24 14	28 09	32 04	35 58	39 53	43 48	
320.....	13 20	17 30	21 40	25 50	30 —	34 10	38 20	42 30	46 40	
340.....	14 10	18 25	23 —	27 27	31 52	36 18	40 44	45 10	49 35	
360.....	15 —	19 41	24 22	29 03	33 45	38 26	43 08	47 50	52 31	
380.....	15 50	20 47	25 44	30 40	35 36	40 33	45 30	50 27	55 24	
400.....	16 40	21 52	27 05	32 17	37 30	42 42	47 55	53 07	58 20	

G. M. BLECH.

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Reviews.

DIAGNOSTIC METHODS. Second edition revised. A Treatise on Diagnostic Methods of Examination. By Prof. Dr. Hermann Sahli, Director of the Medical Clinic, University of Bern. Edited, with additions, by Nathaniel Bowditch Potter, M. D., Asst. Professor of Clinical Medicine, College of Physicians and Surgeons, New York. Octavo of 1,229 pages, containing 472 illustrations. Philadelphia and London: W. B. Saunders Company, 1911. Cloth, $6.50 net; half Morrocco, $8.00 net.

This monumental work first appeared in English in 1905. Though the numerous German editions testify to its popularity in Germany the English translation has been, perhaps, even more popular. While the present English edition is a translation of the fifth German edition, the book has already been reprinted five times in English. All subjects having to do with diagnostic methods are treated in great detail, and the attempt has been made to pay equal attention to all departments of internal medicine. The author reiterates in his preface that the book is not a mere compilation, but that the major portion of the contents represents personal views and observations hitherto unpublished. In order to bring the work abreast of the present state of medical science a great number of changes have been made and many chapters have been rewritten. The translation is an excellent one, and most of the illustrations come from American sources. The present volume cannot be too highly commended to any one who desires a book of reference, in which he may find all modern methods of diagnosis adequately described.

PLASTER OF PARIS AND HOW TO USE IT. By Martin W. Ware, M. D., N. Y., Adjunct Attending Surgeon, Mount Sinai Hospital; Surgeon to the Good Samaritan Dispensary; Instructor of Surgery in the New York Post Graduate School. Second edition revised and enlarged. Price, cloth, square form, $1.25. De Luxe leather, $2.50. Surgery Publishing Co., New York.

This practical little book now appears in its second edition. The chapter headings of the present edition are as follows: The plaster of paris bandage; the application of the plaster bandage

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to individual fractures; fractures of the upper extremity; fractures of the lower extremity; molded plaster of paris splints; plaster of paris in orthopedic surgery.

The author has had ten years dispensary practice, which has comprehended five thousand cases of joint diseases and fractures at the Good Samaritan Dispensary in New York City. The book is concisely and clearly written and is well illustrated. The publishers have done their part in a very satisfactory manner.

INTERNATIONAL CLINICS. Volume I. Twenty-first series, 1911. A quarterly of illustrated clinical lectures and especially prepared original articles on treatment, medicine, surgery, neurology, paediatrics, obstetrics, gynaecology, orthopaedics, pathology, dermatology, ophthalmology, otology, rhinology, laryngology, hygiene, and other topics of interest to students and practitioners. By leading members of the medical profession throughout the world. Edited by Henry W. Cattell, A. M., M. D., Philadelphia, U. S. A., with the collaboration of Wm. Osler, M. D., John H. Musser, M. D., A. McPhedran, M. D., Frank Billings, M. D., Chas. H. Mayo, M. D., Thos. H. Rotch, M. D., John G. Clark, M. D., James J. Walsh, M. D., J. W. Ballantyne, M. D., John Harold, M. D., and Richard Kretz, M. D. Octavo of 300 pages Price $2.00. J. B. Lippincott Company, Philadelphia and London.

This particular volume contains more than the usual number of articles of interest to medical officers of the services. Among these may be mentioned: The spread of pellagra throughout the United States, by George A. Zeller, M. D.; a further contribution to the treatment of syphilis with Ehrlich's dioxydiamido-arsenobenzol, by Sanitatsrath W. Wechselmann; the open or surgical treatment of fractures, by C. P. Thomas, M. D.; refraction by the general practitioner, by William Zentmayer, M. D., and mosquito work in the Canal Zone, by J. A. LePrince, C. E., A. M. Special attention is invited to the last named. Mr. LePrince has been Chief Sanitary Inspector of the Isthmian Canal Commission ever since Colonel Gorgas has had charge of sanitation on the Canal Zone. That is to say, since sanitary work began on the Isthmus in 1904. As such he has had exceptional opportunity to solve difficulties in connection with mosquito work and to originate better means to destroy and control this dangerous insect. In the present article he describes clearly and in detail methods which have been adopted. The monograph is well illustrated with photographs taken on the Isthmus.

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THE PRINCIPLES AND PRACTICE OF DERMATOLOGY. Designed for students and practitioners. By William Allen Pusey, A. M., M. D., Professor of Dermatology in the University of Illinois; Dermatologist to St. Luke's and Cook County Hospitals, Chicago; Member of the American Dermatological Association. Octavo of 1,079 pages. Second edition, with five plates, one in color, and three hundred and eighty-four text illustrations. Price $6.00, cloth, and $7.00, half leather. D. Appleton and Company, 1911. New York and London.

This work is divided into two parts: The principles of dermatology and the practice of dermatology. In the former anatomy, physiology, etiology, pathology, symptomatology, diagnosis, treatment and classification are discussed. The latter is devoted to the various diseases of the skin. More than the usual amount of space is allotted to the former subjects. The classification followed is that generally adopted upon the basis of Hebra's classification. The grouping has been slightly changed; a group is made of angioneurotic dermatoses, one of infectious diseases and one of dry, scaly, inflammatory dermatoses.

The book is clearly written and is exceptionally well illustrated. The publishers should also be congratulated on the success of their efforts to present an attractive volume so far as good paper, clear type, and cuts are concerned.

PREVENTION OF INFECTIOUS DISEASES. By Alvah H. Doty, M. D., Health Officer of the Port of New York. Octavo of 281 pages. Price $2.50 net. D. Appleton and Co., 1911, New York and London.

This is an excellent book. The author, who is well known as the health officer of the port of New York, has had unsurpassed opportunities to study practically infectious diseases in some of their more important aspects. While the subject is not discussed wholly from the standpoint of a port health officer, as might be expected, the prevention of infectious diseases is considered principally in this relation. The chapter headings are as follows: General consideration; classification of infectious diseases; marine sanitation; smallpox; yellow fever; typhus fever; cholera; plague; disinfection; disinfectants; disinfection in connection with apartments of the sick; isolation and discharge of the patient; the thermometer; and the mosquito.

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PUBLIC HYGIENE. By Thomas S. Blair, M. D., Neurologist, Harrisburg, Pennsylvania Hospital, Author "A Practitioner's Handbook of Materia Medica," "A Practitioner's Handbook of Modern Medical Treatment," etc. Assisted by numerous contributors. In two volumes, with 158 illustrations. Octavo of 310 and 644 pages, respectively. Price $10.00. Richard G. Badger, The Gorham Press, 1911, Boston, Mass.

This work is decidedly popular in tone. The author announces in his preface that he has been lead to institute a personal investigation of hygiene from the standpoint of a seasoned general practitioner of medicine and that the decision has been reached that public hygiene has developed into too much of a speciality and needs the tempering conclusions of the whole body of the medical profession. Exactly what this means is not entirely clear. Among the contributors can be found none of the more prominent sanitarians of the country, nor is it apparent in each instance who is responsible for a particular chapter. Possibly this is not so important, however, as the work as a whole is a compilation rather than a series of original articles.

It is believed that considerable condensation would be advantageous, and some of the chapters are padded with extraneous matter. Here and there one chances upon an interesting fact, and the illustrations are good, though sometimes superfluous.

A just appreciation is expressed in no unmeasured terms of the sanitary accomplishments of the services. It might be well to point out that contrary to the author's opinion, in respect to sanitation as a specialty, this success has been largely due to special knowledge from both scientific and administrative standpoints.

CHEESE: ITS POSITION IN HISTORY, COMMERCE, AND DIETETICS. By Major Robert J Blackham, Knight of Grace of the Order of St. John in England, D. P. H. Lond., R. A. M. C., of the Middle Temple, Barrister-at-Law, Divisional Sanitary Officer, First Division, Indian Army. [Excerpt from Vol. XXXI., No. 10 (1909) of the Journal of The Royal Sanitary Institute.]

This mongraph is headed by the following quotation:

> He was of old Pythagoras' opinion
> That green cheese was most wholesome with an onion,
> Coarse Mechlin bread; and for his daily swig,
> Milk, buttermilk and water, whey or whig.—
> *Taylor's Life of Old Parr.*

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The author mentions the great antiquity of cheese as a prepared food and details briefly its early history. The making of cheese is then described. The varieties of cheese are noted and the dietetics, nutritive value and the examination of cheese samples are all discussed concisely.

The author states that the purpose of his paper is to enlist the aid of practitioners in a crusade against the over-eating of meat, with a view to substituting cheese in part, at least, for this article of diet. We are all probably agreed that this would be an advantage from the economic as well as the health standpoint, but dietetic habits die very hard, and though some progress has been made within the past few years in lessening the over consumption of meat, education to this end is still very much needed.

TRANSACTIONS OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. Third series, Volume the Thirty-First. Octavo of 663 pages. Printed for the College. Philadelphia, 1909.

Through the publication of many previous volumes these transactions are well known to the medical profession. The present volume contains the papers read before the College from January, 1909, to December, 1909, inclusive. Among the more interesting articles, so far as readers of this journal are concerned, may be mentioned: The Law of Degeneracy in its Relation to Medicine, by Charles P. Noble, M. D.; Surgery of the Stomach, by John B. Deaver, M. D., LL. D; Spasm of the Arteries, by Paul Lazarus, M. D.; and Control of Hemorrhage in Typhoid Fever Considered from the Surgical Standpoint, by Richard H. Harte, M. D.

INDIAN AMBULANCE GAZETTE. The Official Organ of the Indian Branch of The St. John Ambulance Association. Volume 1, January, 1911, No. I. Edited for the Indian Branch Committee.

The work of the St. John Ambulance Association in India is not as well known as it is in England, where for some thirty years first aid and home nursing courses have been generally given under the auspices of this association and where for a somewhat less period a brigade has been in existence. The inauguration of this publication shows, among other things, how much progress has been made in these directions in India. There the work has been somewhat hampered by lack of general information in ref-

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erence to the purposes of the Association. About eighteen months ago a small book called the "White Book" was published by the Indian Branch, and the Indian Ambulance Gazette has now been started to supplement the information contained in the "White Book" and to keep up interest.

This number of the Gazette, besides containing information of particular interest to the many St. John Ambulance Association "Centers" in India, has a few articles which treat of ambulance work in other countries. One of these is devoted to America. While an improvement in our National Red Cross is noted, the statement is made that it can hardly yet be said that our Red Cross is worthy of our great nation.

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Editorial.

THE accomplishment of the medical corps of the Army in preventing typhoid fever in the division in the southwest by means of anti-typhoid inoculation should not be allowed to over shadow another recent and scarcely less notable sanitary achievement to the credit of that corps. The practical eradication of beriberi from the Philippine Scout organization is what is referred to in this connection. This subject was discussed at some length in an article which appeared in the May number of this journal. The article in question was written by Major Weston P. Chamberlain, Medical Corps, U. S. A., president of the tropical disease board in the Philippine Islands. The excellent results attained in respect to beriberi prevention must be ascribed to this board. The article referred to should be read in its entirety, and it is only necessary here to point out that in the last four months of 1910 not a single case of beriberi occurred in the Scouts, and that so far as could be discovered this can only be ascribed to a change in diet, which consisted of a reduction in the quantity of rice consumed and the substitution, in lieu of the rice taken away, of a legumen. It is still too early, of course, to assert absolutely that beriberi has thus been brought under complete control, but this is by far the most encouraging result which has yet been attained with this terrible scourge of the Orient.

When we look back to the time of the Spanish-American War we can realize how notably our standard has been raised in respect to sanitation. Results that were acceptable in those days would be scorned in the light of our more recent knowledge. Beriberi prevention means as much to the Orient as typhoid prevention does to us, and if the conclusions of the tropical board are correct in respect to the former disease the excellent sanitary results attained by the Japanese during the Russo-Japanese War would be very poor in the future, as their failure in respect to beriberi was as notable as their success in limiting the spread of other diseases.

How notably, too, have our views changed in respect to sanitation. Even yet we not infrequently see statements made that

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sanitation is cleanliness. It is, of course, nothing of the kind. Cleanliness *per se* cannot prevent beriberi, typhoid, smallpox, plague, or the other preventable diseases. Good sanitary surroundings help a great deal it is true, but what we must know first is the cause of each preventable disease and then we must study out some plan to prevent the operation of such causes under service conditions.

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News of the Services.

Articles by members appearing elsewhere have been noted during the month as follows: Venereal Prophylaxis in the United States Navy, by Surgeon Robert E. Ledbetter, U. S. Navy; Studies upon Plague in Ground Squirrels and a Plague-Like Disease of Rodents, by George W. McCoy, U. S. Public Health & Marine-Hospital Service; Cholera: Its Nature, Detection, and Prevention, by P. A. Surgeon A. J. McLaughlin, U. S. Public Health & Marine-Hospital Service, and A Report on an Original Form of Sulphur Burner for Disinfection, by P. A. Surgeon N. Roberts and F. Alex. McDermott, U. S. Public Health & Marine-Hospital Service.

State of Ohio,
Adjutant General's Department,
Office of the Adjutant General,
Columbus, April 20, 1911.

Special Orders,
No. 75.

Par. 1—Lieutenant Colonel Edmund C. Brush, Chief Surgeon of Division, O. N. G., is hereby promoted to the rank of Brigadier General.

Par. 2—Upon his own request, after twenty-five years of honorable and faithful service and approved by all concerned, Brigadier General Brush, Chief Surgeon, Ohio National Guard, is placed upon the retired list of officers, Ohio National Guard, under the provisions of Section 5201, General Code of Ohio.

Par. 3—In the retirement of Brigadier General Brush, the State of Ohio is losing the active services of an efficient and distinguished officer and a gentleman whose personality was beloved by all members of the Ohio National Guard.

By command of Governor Harmon.

Charles C. Weybrecht,
Adjutant General.

Headquarters of Division,
Ohio National Guard,
Office of the Chief of Staff,
Akron, Ohio, April 25, 1911.

Brigadier General Edmund C. Brush,
Zanesville, Ohio.

Sir:

I have the honor to transmit to you the following copy of the official indorsement on your letter requesting retirement, forwarded to The Adjutant General:

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"Headquarters of Division, O. N. G.,
Akron, Ohio, April 18, 1911.

"In pursuance of intentions long entertained and heretofore expressed by him, Lieutenant Colonel Brush has forwarded the within request for his retirement, after twenty-five years' active service, to take effect April 20th, 1911. In view of this expressed desire, the within communication is now forwarded to The Adjutant General, with the request that this officer be promoted to the grade of Brigadier General,—the highest grade heretofore held by him; and this having been done, the Division Commander recommends that the within request for retirement be granted.

"In this retirement, after all these years of honorable and faithful service, the State and Division are losing the active services of an efficient and a distinguished officer, while the Division Commander is also losing from his official family an officer and a gentleman whose personality as well as efficient services cause this severing of official relations to arouse feelings of profound regret.

"Very respectfully,

"(Signed) Charles Dick,
"Major General,
"Commanding Division."

It certainly was with sincere and profound regret that your request for retirement was forwarded by the Chief of Staff of Division, and your letter accompanying this request caused feelings of sadness which were only tempered by recollections of the happy years of service together. Memories of these years will last and will add to the pleasure of future associations which it is hoped may be granted personally, although the happy official relations have been severed.

Very respectfully and sincerely yours,

(Signed) George M. Wright,
Colonel O. D., Chief of Staff.

State of Ohio,
Adjutant General's Department,
Office of the Adjutant General,
Columbus, April 24, 1911.

General Orders,
No. 10.

Major Joseph A. Hall, Medical Corps, Ohio National Guard, is hereby promoted to be Lieutenant Colonel, Medical Corps, Ohio National Guard. Lieutenant Colonel Hall is hereby assigned as Chief Surgeon of Division, and will report, in person, to the Commanding General of the Division, Ohio National Guard, upon the receipt of these orders.

In addition to his duties as Chief Surgeon of Division, he will continue as acting Surgeon General.

By Command of Governor Harmon.

Charles C. Weybrecht,
The Adjutant General.

Official:

J. M. Rieger,
Colonel, Assistant Adjutant General.

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List of Medical Officers, Organized Militia, authorized to attend Maneuver Camp at San Diego, California, during the two weeks period beginning April 5, 1911:

Major H. Vance Clymer, Medical Corps, Arizona N. G., Yuma, Arizona.
Major William J. Hanna, Medical Corps, California N. G., Sacramento, California.
Major C. S. Moody, Medical Corps, Idaho N. G., Sandpoint, Idaho.
Major S. A. Milliken, Medical Corps, New Mexico N. G., Silver City, N. M.

The following Medical Officers of the Organized Militia attended the second period of observation and instruction at the Maneuver Camp, San Diego, California, beginning April 25th:

Major Wm. C. Riddell, Medical Corps, N. G. of Montana.
Major F. M. Carroll, Medical Corps, N. G. Washington.
Major Frampton C. Brosius, Medical Corps, N. G. Oregon.
Captain Pliney P. Lester, Medical Corps, N. G. Colorado.
Captain A. E. Lane, Medical Corps, N. G. Wyoming.

Medical Officers—Organized Militia—Maneuver Division.

San Antonio, Texas, April 5, 1911.

Name.	Rank.	State.	Assignment.	Assignment.
Apted, R. C.	Major	Mich	A. C., No. 2 (1st wk.)	(Second wk.)
Bradbury, Bial F	Major	Maine	15th Infantry, do	
Black, J. T	Capt	Conn	3d Fd. Artillery, do	
Bright, J. F	Capt	Vir	Fd. Hospital, No. 2, do	
Clark, Thomas C	Major	Minn	28th Infantry, do	
Conkling, William S	Major	Iowa	11th Cavalry, do	
Davidson, William R	Major	Ind	18th Infantry, do	Fd. Hospital, No. 4.
Francis, C.H	Capt	N. J	10th Infantry, do	(All other officers in field with 3d Brigade—two ambulance companies and two field hospitals.)
Glenn, Eugene B	Major	N. C	13th Infantry, do	
Gebhart, O. C	Major	Mo	Fd. Hospital, No. 6, do	
Hall, Joseph A	Major	Ohio	Fd. Hospital, No. 4, do	
Hibbitt, Charles W	Major	Ky	A. C., No. 4, do	
Morrill, W. P	Capt	Md	Fd. Hospital, No. 38, do	
Mitchell, L. B	1st lieut	Fla	A. C., No. 38, do	
Stayer, Andrew S	Lt. col	Pa	Fd. Hospital, No. 2, do	
Stivers, Moses A	Capt	N. Y	17th Infantry, do	
Scott, Hugh	Capt	Okla	17th Infantry, do	
Schayer, Isadore	Capt	S. C	A. C., No. 38, do	
Williams, Frank P	Major	Mass	18th Infantry, do	
Willis, C. N	Major	Ga	A. C., No. 6, do	
Wilkins, Russell	Major	N. H	28th Infantry, do	
Young, C. S	Major	Ill	Fd. Hospital, No. 6, do	

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The following notes have been received from the Division of Militia Affairs:

97. (22866) The supply of Form No. 34, Requisition for Field Medical Supplies, is exhausted, and, pending the revision of the field supply table, a new edition will not be printed. Form No. 35 is a supply request form and may be used for making requisitions for field supplies.

99. (20880) In connection with the organization of the Medical Department of a State having a separate brigade organization, it is suggested that there should be a major for each brigade and regiment organized, to be assigned as chief surgeon, also an additional major for duty as sanitary inspector, and a major to command a field hospital.

Provision should be made for a sufficient number of captains or first lieutenants in the proportion of three to each regiment (of three battalions); also one for each separate battalion or squadron of infantry and cavalry, battery of field artillery, companies of engineers and signal corps; two to four if a field hospital is organized and three to five for each ambulance company.

It is suggested that it would be well, in the appointment of medical officers of the Organized Militia, if certain physical, professional, and moral requirements were demanded, and if none were appointed until they received the approval, after examination, of a board of medical officers of the Organized Militia; that all promotions in the medical corps should be subject to examination, and that original entries should be in the grade of first lieutenant, and promotion to the rank of captain (with examination) after three years' service.

It is not regarded essential that noncommissioned officers should be limited to registered pharmacists or licensed practitioners of medicine. It is preferable that these appointees should demonstrate their fitness by examination and thus encourage the promotion of all enlisted men belonging to sanitary troops.

104. (23213) The Secretary of War is of the opinion that, where the Organized Militia of a State comprises a division of three brigades, four field hospitals and four ambulance companies should be organized, in addition to the regimental infirmaries (the equipment of which is provided under paragraph 593, Manual of the Medical Department, 1906). The equipment for a field hospital is given in paragraphs 582 to 590, inclusive, Manual of the Medical Department, 1906, and for an ambulance company in paragraph 594 of the manual referred to. Regimental infirmaries are all that are necessary for regiments and if one or more field hospitals are organized, the regimental hospitals can be ignored. Further information in this connection may be obtained by reference to Circular, No. 19, Division of Militia Affairs, November 9, 1910.

9. (24254) Paragraph IV, General Orders, No. 28, War Department, February 28, 1911, directs that all hand litters be transferred from the Quartermaster's Department to the Medical Department. Similar transfer should be made in the Organized Militia, in order to conform to the usages in the Regular service.

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Orders have been issued relieving Colonel L. W. Crampton, Medical Corps, from duty in the Philippines Division and directing his return to the States on the September 15th transport.

During the month the necessary orders have been issued effecting the changes in medical personnel on duty in Alaska for this year: Captain Ralph S. Porter is assigned to duty at Fort William H. Seward, to relieve Captain Fred W. Palmer; 1st Lieutenant C. W. McMillan, Medical Corps, goes to Fort St. Michael, to relieve Captain Arthur W. Whaley; 1st Lieutenant Horace M. Roberson, Medical Corps, goes to Fort Davis, Alaska, to relieve Lieutenant D. W. Harmon, Medical Corps.

The post at Fort Egbert, Alaska, is to be abandoned in the near future, and 1st Lieutenant Frank Suggs, Medical Reserve Corps, on duty at that post, will, upon the final abandonment of that post, proceed to Seattle, and report for orders.

The reports from the Maneuver Camps in the South continue to be most favorable with reference to the sanitary conditions and the sick reports. There has been but one case of typhoid fever among the troops sent to camp the early part of March, and this case occurred at San Antonio in a non-inoculated civilian teamster. It appears, from the experience that the Department has had in these camps, that typhoid fever can be prevented among soldiers mobilized for war purposes by anti-typhoid inoculation.

Colonel William B. Davis, Medical Corps, is spending his leave of absence at Baltimore, Maryland.

1st Lieutenant James B. Ferguson, Medical Reserve Corps, was placed on the retired list April 27th, under an Act of Congress approved on March 4th.

1st Lieutenant Eben C. Hill, Medical Corps, is at the Walter Reed General Hospital, under observation and treatment.

A considerable delay has been experienced in commissioning the present Contract Dental Surgeons as 1st Lieutenants in the Dental Corps. This was due to the difficulty in getting a report of the physical condition of the Dental Surgeons. The last report was received last week and on May 10th the Surgeon General recommended that all the Contract Dental Surgeons then in the service, except one, be commissioned in the Dental Corps. It is greatly to be regretted that the Medical Board reported that Dental Surgeon Millikin was not physically qualified for appointment in the Dental Corps.

Major Frederick P. Reynolds, Medical Corps, accompanied the students from the War College on the staff ride through Virginia. They left Washington on the morning of May 10th.

Lieutenant James C. Ballard, Medical Reserve Corps, who arrived in San Francisco, California, from Manila, P. I., on May 12th, was assigned to duty at the Presidio of San Francisco, California.

1st Lieutenant Henry du R. Phelan, Medical Reserve Corps, who has just arrived from a tour of duty in the Hawaiian Islands, has been assigned to duty at Fort Bayard, New Mexico.

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1st Lieutenant Edmund W. Bayley, Medical Reserve Corps, who has recently returned from a tour of service in the Philippine Islands, has been assigned to duty at Fort Sill, Oklahoma.

A marriage has been arranged and will take place early in July between Sophie, youngest daughter of Sir Lewis and Lady Michell, of Rondebosch, South Africa, and Fleet Surgeon A. Gaskell, R. N., son of the late Hunter Gaskell, Esq.

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ARMY MEDICAL CORPS EXAMINATIONS.

The Surgeon General of the Army announces that preliminary examinations for the appointment of first lieutenants in the Army Medical Corps will be held on July 10, 1911, and September 5, 1911, at points to be hereafter designated.

Full information concerning these examinations can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between 22 and 30 years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training after graduation. The examinations will be held concurrently throughout the country at points where boards can be convened. Due consideration will be given to localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible.

The examination in subjects of general education (mathematics, geography, history, general literature, and Latin) may be omitted in the case of applicants holding diplomas from reputable literary or scientific colleges, normal schools or high schools, or graduates of medical schools which require an entrance examination satisfactory to the faculty of the Army Medical School.

In order to perfect all necessary arrangements for the examination, applications must be complete and in possession of The Adjutant General at least three weeks before the date of examinations. Early attention is therefore enjoined upon all intending applicants. There are at present sixty-one vacancies in the Medical Corps of the Army.

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